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ABSTRACT

Two organizations experienced in test construction, the American Institutes for Research (AIR) and Science Research Associates (SRA) assumed, under contract, the responsibility for formulating statements of career and occupational development (COD) objectives acceptable to scholars, educators, and lay citizens. Development of the COD objectives involved five years of preparation. The difficulties of defining terms, determining the scope of the objectives, phrasing the statements of objectives, and the methods of research undertaken by each contractor are described in the report. The final version of the objectives was accepted by National Assessment in July of 1970. COD is unique in that the objectives of the area are not the educational goals of any one school subject; they do not belong to a single discipline. The area includes many of the general achievements that result from general education and from guidance and counseling. The five major objectives are: 1) to prepare for making career decisions; 2) to improve career and occupational capabilities; 3) to possess skills that are generally useful in the world of work; 4) to practice effective work habits; and, 5) to have positive attitudes about work. The major objectives are followed by subobjectives and further defined in terms of those objectives which should be attained by age 9, age 13, age 17, and (young) adult. The objectives will serve as the basis of exercises that will be administered at four age levels in 1972-73. (JMB)

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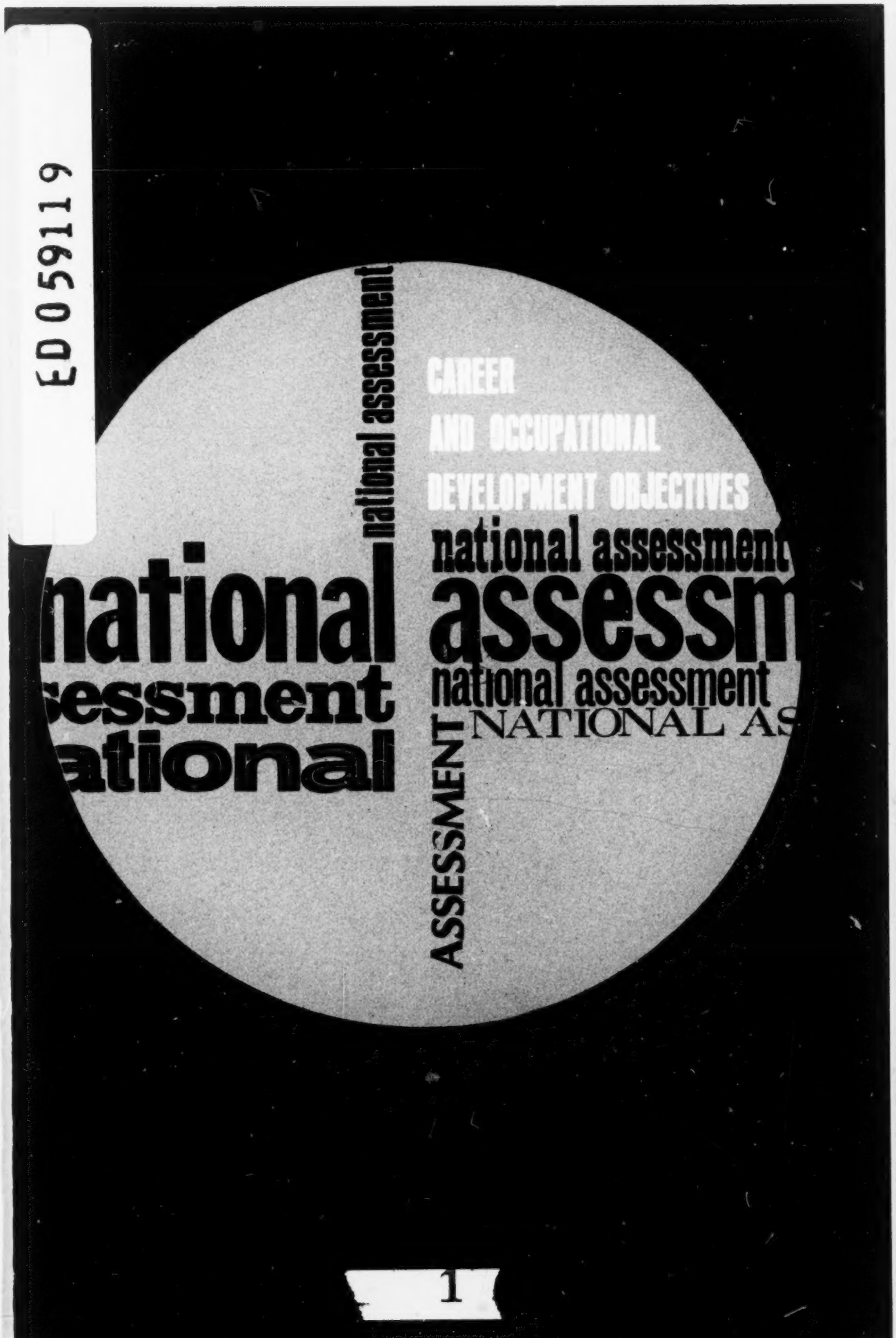
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NATIONAL ASSESSMENT is reconsidering the possibility of measuring job-specific skills, contrary to what is said on page 4, Chapter II and following. This notice does not change the objectives; it is merely an addition to the history of the COD development.

Objectives for

Career and Occupational Development

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PREFACE

The results released to the public by National Assessment in July, 1970, marked the initial reporting based on the first year's assessment of 9-, 13-, and 17-year-olds and young adults between the ages of 26 and 35. National Assessment is now under full-scale operation, and reports will be made continuously as the project collects data describing the knowledge, skills, and attitudes attained by groups of young Americans.

The periodic release of results by National Assessment represents only one aspect of the project. Behind each report lies a complex series of activities that has been completed through the cooperation and participation of thousands of specialists representing a wide variety of disciplines and a number of organizations specifically equipped to handle various operations. From developing educational objectives for a subject area to producing exercises that assess how well those objectives are being met, from constructing a broad and representative sample design to locating individuals in homes and schools throughout the nation for the assessment, from processing the mountains of data collected to finding meaningful ways in which the information can be presented—countless individuals have completed innumerable tasks before reports are ready for public release.

Nor are the reports that will be released in the next several years—when assessment in each of the 10 subject areas will be completed—in themselves the end result of the project. One of National Assessment's main purposes is to compare the educational attainments of groups of young Americans over time. An important use of the first data gathered for each subject area, therefore, is to provide benchmarks against which the results of subsequent reassessments may be compared to determine progress or decline.

The educational objectives for the area of career and occupational development (COD) are presented here, along with an introduction to the history and goals of National Assessment. The unusually detailed discussion presented in Chapter II of the steps followed in developing the COD objectives serves to emphasize the difficulties encountered in defining the subject area and in

developing objectives acceptable to various groups of people.

The COD objectives are only one part of the overall project, but they are a vital and important part. The careful attention given to their development and refinement is typical of efforts made in carrying out other National Assessment activities. The project is an evolving one, and each activity is subject to continuous reexamination and refinement as National Assessment attempts to provide all those interested in what young people are learning with valuable information on the outputs of the American educational system.

Barbara Goodwin
Eleanor L. Norris
Editors

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Chapter I

INTRODUCTION

The National Assessment is designed to furnish information to all those interested in American education regarding the educational achievements of our children, youth, and young adults, indicating both the progress we are making and the problems we face. This kind of information is necessary if intelligent decisions are to be made regarding the allocation of resources for educational purposes.

In the summer of 1963 the idea of developing an educational census of this sort was proposed in a meeting of laymen and professional educators concerned with the strengthening of American education. The idea was discussed further in two conferences held in the winter of 1963-64, and a rough plan emerged. The Carnegie Corporation of New York, a private foundation, granted the funds to get started and appointed the Exploratory Committee on Assessing the Progress of Education (ECAPE). The Committee's assignment was to confer at greater length with teachers, administrators, school board members, and other laymen deeply interested in education to get advice on ways in which such a project could be designed and conducted to be constructively helpful to the schools and to avoid possible injuries. The Committee was also charged with the responsibility for getting assessment instruments constructed and tried out and for developing a detailed plan for the conduct of the assessment. These tasks required four years to complete. On July 1, 1968, the Exploratory Committee issued its final report and turned over the assessment instruments and the plan that had been developed to the Committee on Assessing the Progress of Education (CAPE), which was responsible for the national assessment that began in February of 1969. In July, 1969, governance of the project was assumed by the Education Commission of the States, a compact of 43 states and territories whose purpose is to discuss and coordinate educational problems and activities. The bulk of the work described here was conducted under the direction of ECAPE and CAPE.

In the early conferences, teachers, administrators, and laymen all

emphasized the need to assess the progress of children and youth in the several fields of instruction, not limiting the appraisal to the 3 Rs alone. Hence, the first assessment includes 10 areas: reading, writing (written expression), science, mathematics, social studies, citizenship, career and occupational development (originally called vocational education), literature, art, and music. Other areas may be added in the future. The funds available were not sufficient to develop assessment instruments in all fields of American education. The 10 chosen for the first round are quite varied and will furnish information about a considerable breadth of educational achievements.

Because the purpose of the assessment is to provide helpful information about the progress of education that can be understood and accepted by laymen as well as professional educators, some new procedures were followed in constructing the assessment instruments that are not commonly employed in test building.

These procedures are perhaps most evident and important in the formulation of the educational objectives which govern the direction of the assessment in a given subject matter area. Objectives define a set of goals which are agreed upon as desirable directions in the education of children. For National Assessment, goals must be acceptable to three important groups of people. First, they must be considered important by scholars in the discipline of a given subject area. Scientists, for example, should generally agree that the science objectives are worthwhile. Second, objectives should be acceptable to most educators and be considered desirable teaching goals in most schools. Finally, and perhaps most uniquely, National Assessment objectives must be considered desirable by thoughtful lay citizens. Parents and others interested in education should agree that an objective is important for youth of the country to know and that it is of value in modern life.

This careful attention to the identification of objectives should help to minimize the criticism frequently encountered with current tests in which some item is attacked by the scholar as representing shoddy scholarship, or criticized by school people as something not in the curriculum, or challenged by laymen as being unimportant or technical trivia.

National Assessment objectives must also be a clear guide to the actual development of assessment exercises. Thus, most assessment objectives are stated in such a way that an observable behavior is described. For example, one citizenship objective for 17-year-olds

is that the individual will recognize instances of the proper exercise or denial of constitutional rights and liberties, including the due process of law. Translated into exercise form, this objective could be presented as an account of press censorship or police interference with a peaceful public protest. Ideally, then, the individual completing the exercise would correctly recognize these examples as denials of constitutional rights. It should be noted, however, that exercises are not intended to describe standards which all children are or should be achieving; rather, they are offered simply as a means to estimate what proportion of our population exhibits the generally desirable behaviors implicit in the objectives.

The responsibility for bringing together scholars, teachers, and curriculum specialists to formulate statements of objectives and to construct prototype exercises was undertaken through contracts by organizations experienced in test construction, each responsible for one or more subject areas. In several areas the formulation of objectives was particularly difficult because of the breadth and variety of emphases in these fields. Hence, two contractors were employed to work on each of these areas, independently, in the hope that this would furnish alternative objectives from which panels composed of lay persons could choose. In some instances, subject matter experts were requested to do even further work with the objectives before they were accepted by CAPE.

This brief description of the process employed in identifying objectives for the first assessment should furnish a background for examining the sections that follow.

Chapter II

PROCEDURES FOR DEVELOPING CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES

Peggy A. Bagby

National Assessment Consultant

Objectives for the area of career and occupational development (COD) appear in the following chapter. In arriving at these goals many paths were pursued, reflecting the changing definition of the subject area itself and the difficulty of reaching consensus on what would be appropriate objectives. Time and again the people working to define objectives were faced with the question, "Should the assessment be aimed at broad preparation for the ability to earn a living and contribute to society, or should it deal with specific occupational skills?"

The final resolution of this question underlies the rejection of the name originally given to the subject area, "vocational education," and the selection of the new title, "career and occupational development." The present objectives focus on generally useful skills that are of value in a wide variety of occupational settings rather than on skills that are specific to one or only a few jobs. They also emphasize accurate self-evaluation, realistic attitudes toward work, and the importance of planning for a career, not only as a youngster but also as an adult seeking to develop and improve occupational capabilities.

Development of the COD objectives involved five years of preparation, two different contractors, and more than a hundred consultants.[1] The long and arduous process resulted in a one-year postponement of the assessment of COD.

The work began in 1965 when ECAPE, recognizing the need to explore more than one approach to the development of objectives,

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[1] Contractor staff members involved in the development of COD objectives are listed in Appendix A.

asked two different contractors to begin preparation of materials. In July of that year the American Institutes for Research (AIR) of Pittsburgh and Science Research Associates (SRA) of Chicago were awarded independent contracts to explore the field of vocational education and determine objectives.

In addition to the criteria established by ECAPE and listed in the introduction to this brochure, AIR and SRA were asked to keep several other important considerations in mind:

1. National Assessment would be directed toward four age levels—9-, 13-, and 17-year-olds, and young adults between the ages of 26 and 35. Parochial, private, and public school students would all be involved, ensuring that the assessment would be truly national in character.
2. The objectives and the exercises developed from them should focus on the whole range of possible achievements. To meet this need, they should include tasks that almost all of the population at a given age level could complete successfully, tasks that about half could complete successfully, and tasks that only the most knowledgeable or highly skilled could complete successfully.

In the original proposals submitted to ECAPE, both contractors expressed similar thoughts about the purpose of vocational education. AIR noted that ". . . youths need to develop salable skills and those understandings and attitudes that make the worker an intelligent and productive participant in economic life."[2] A similar statement appeared in the original proposal submitted by SRA: ". . . Vocational education is assumed to be directed toward those aspects of individual development that lead to productive participation in our society's economic life."[3]

AIR began its work by reviewing materials related to vocational education objectives in the professional literature. After this search the AIR staff developed a preliminary set of objectives. To determine the completeness of the set, AIR conducted telephone interviews with 24 adults aged 18 to 30. During this process AIR also sought information on the adults' methods of choosing and

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[2] Altman, J.W. and Erskine, J.M. Assessing the Progress of Education: Vocational Educaton. A Research Proposal to the Exploratory Committee on Assessing the Progress of Education. American Institutes for Research, Pittsburgh: March, 1965.

[3] A Plan for the Development of a Comprehensive Assessment Program in Vocational Education. Science Research Associates, Inc., Chicago: April, 1965.

training for their careers and the extent to which they had received career guidance in high school.

Through these interviews and the earlier search of the literature, AIR identified three broad objectives, each further defined with more specific subobjectives. The first and second objectives dealt with choosing and forging a career, respectively. The third objective concerned the demonstration of basic vocational capabilities. Under this last objective were included six broad clusters of behaviors and skills that AIR had identified in an earlier study of generalizable vocational capabilities for the Ford Foundation:[4] mechanical, electrical, spatial, chemical and biological, symbolic, and people.

After the three broad objectives had been developed, AIR convened a panel of experts from the fields of education, industry, and labor to determine the comprehensiveness and appropriateness of its work.[5] The panel judged the three broad objectives as comprehensive, although their discussions did result in some editorial changes and the addition of a few specific subobjectives. The panelists also felt that the six behavior and skill clusters covered the occupational spectrum and helped to elaborate and clearly delineate the third objective dealing with basic vocational capabilities.

Following the conference, AIR staff members incorporated the panelists' suggestions and then proceeded to develop comprehensive rationales to provide additional explanation of the objectives. Each rationale consisted of a description of the particular behavior concerned, an analysis of the behavior, and specifications from which exercises could be developed to assess the behavior.

In November of 1965 AIR submitted the completed set of objectives and rationales to ECAPE.

SRA also began its work on the development of objectives for vocational education by reviewing the professional literature. Then the SRA staff convened a panel of subject matter specialists, in August of 1965.[6] The panelists were asked to examine a tentative

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[4] The results of the AIR study were later published in Altman, J.W. Research on General Vocational Capabilities (Skills and Knowledges, Final Report). Institute for Performance Technology, American Institutes for Research, Pittsburgh: March, 1966. (Conducted under a grant from the Ford Foundation.)

[5] Names of the members of the AIR Vocational Education Objectives Panel are listed in Appendix B.

[6] Names of the members of the SRA Vocational Education Objectives Panel are listed in Appendix C.

list of objectives prepared by the SRA staff, and also to help establish an operational definition of the area to be explored. An immediate reaction of the panelists was that "vocational education" was not a comprehensive title for the field under investigation. They suggested "education for the world of work" as a more appropriate title. They also recommended that objectives concerned with the cognitive and motor areas be restricted to those knowledges and skills necessary for nonprofessional occupations, while the objectives dealing with the effective and general guidance areas encompass the entire occupational spectrum.

The panelists examined the tentative objectives prepared by SRA and then proceeded to develop a comprehensive list of underlying concepts from which statements of goals could be determined. These concepts resulted in 51 goals of "education for the world of work."

Shortly after this meeting, SRA submitted the 51 goals to 17 reviewers representing the fields of industry, government, labor unions, general education, and vocational education.[7] The reviewers checked the goals for comprehensiveness and clarity, and the list was later edited to incorporate their suggestions. The list was also sent to about 2,000 leaders in vocational education who were asked to rank the goals in their order of importance. As a result of these reviews, the 51 goals were reorganized and grouped under six broad objectives. Finally, in October of 1965, SRA met with four curriculum experts to determine appropriate age levels for each goal.[8]

In November of 1965 SRA submitted its completed set of objectives to ECAPE. The six broad objectives were:

I. The student should have an understanding of his own abilities, needs, and attitudes relevant to vocational choice and continuing vocational development.
II. The student should possess knowledge and skill in a specific occupational field in the nonprofessional world of work.
III. The student should develop the concept of productivity for personal and social goals.
IV. The student should have an understanding of the inter-

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[7] Names of the reviewers of SRA's preliminary statement of goals are listed in Appendix D.

[8] Names of the curriculum experts are listed in Appendix E.

action of people and groups.

V. The student should possess knowledge of a general nature important to all individuals and basic to most vocations.
VI. The student should possess information about vocations—their dynamic character, requirements, and environments.

One of the main differences between the objectives submitted by AIR and SRA was the kinds of skills to be assessed. AIR did not include an objective dealing with job-specific skills; SRA did. (See Objective II.)

In preparing objectives for vocational education, AIR's philosophy was that the increasing rate of technological development demands people with skills and knowledges that are generalizable among a variety of current and future job possibilities. Thus AIR did not submit an objective focusing on specific skills, but instead proposed an objective dealing with basic vocational capabilities. Under this goal were included the six clusters of behaviors and skills mentioned earlier, which were considered to be generalizable across a variety of occupations. SRA had originally questioned the feasibility of assessing an objective dealing with specific skills, but nonetheless felt that such a goal was a vital part of vocational education.

The AIR and SRA objectives received by ECAFE were in turn given to eleven independent panels of lay persons for review. The purpose of the lay reviews was to ensure that all objectives developed for ECAPE were judged relevant and desirable to concerned lay citizens. Following the eleven individual meetings, the lay panel chairmen were brought together for a session in December, 1965, to pool their recommendations to the Exploratory Committee.[9]

In their review of vocational education, the lay panelists struggled with the same problem the contractors had faced—should specific skills be assessed, or should the focus be on general preparation for participation in the working community? The lay panelists finally agreed that the assessment of vocational education should deal with both the total career concept and the development of specific skills.

With the exception of the SRA objective dealing with specialized knowledge and skills, the panelists found considerable overlap in the statements submitted by the two contractors. Therefore, the panels recommended that SRA pursue development of

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[9] Names of the chairmen of the lay panels are listed in Appendix F.

exercises to assess job-specific skills, and that AIR deal with the broader areas of general career development and basic vocational capabilities. ECAPE accepted this recommendation and asked the contractors to continue their work.

During the next 18 months the efforts of the contractors focused on exercise development, and it was not until August, 1967, that the objectives came under scrutiny again. At that time 20 experts were called together to review the exercises prepared by AIR and SRA.[10] During the conference the participants pointed out several difficulties with the two sets of objectives. The reviewers felt that AIR's approach to the guidance aspect of vocational education was outdated; they criticized that portion of the objectives as being geared to the trait-factor matching concept, in which so-called "personality traits" are interpreted as indicators of specific occupational potentialities. They felt that the objectives should instead focus on dynamic career development, in which a number of factors are recognized to play an important role in occupational guidance. The reviewers also pointed out that SRA's approach to specific skills was not suitable for the general population, again raising the question of whether to assess goals for all people or just for those with specialized training. A general criticism of both contractors' objectives was that they dealt almost entirely with content and with thinking about content, with little or no emphasis on performance.

As a result of these criticisms, as well as of doubts expressed about the quality of the exercises, the ECAPE staff felt it necessary to review National Assessment's basic approach to vocational educaton. Thus in March of 1968 a conference was held to consider the problem.[11] Early in the meeting it became evident that "vocational education" had connotations that no longer applied to the area being covered. From a number of suggested alternatives "career and occupational development" was chosen as the title that best described the intent of the area.

The issue of assessing specific skills was once again considered. There was a general feeling that assessing a subpopulation with specialized training was not consistent with National Assessment's design. On the other hand, obtaining information on whether people had job-specific skills was still considered a desirable goal.

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[10] Names of the participants at the Vocational Education Conference are listed in Appendix G.

[11] Names of the participants at the second Vocational Education Conference are listed in Appendix H.

The problem of assessing job-specific skills was not finally resolved at the March, 1968, conference, but the participants did recommend that this SRA objective be integrated with AIR's third objective, "Can demonstrate basic vocational capabilities." The conference participants also suggested that the objectives in general be revised for clarity of communication with the lay public and with educators.

In November, 1968, AIR was awarded a three-month contract to continue work on the objectives and exercises. AIR left its first two objectives (choosing and forging a career, respectively) essentially unchanged, and the new work related to these consisted mainly of defining appropriate age-level behaviors. The third objective underwent substantial revision, however. The original statement, "Can demonstrate basic vocational capabilities," was changed to "Demonstrating general occupational capabilities," and the three subobjectives were reorganized and expanded. Also, as recommended by the March, 1968, ECAPE conference participants, SRA's specific skills objective became a new subobjective—"Demonstrating specific vocational capabilities." Finally, the third objective was expanded to include behavioral expectations for each subobjective.

In March, 1969, six advisors met to review AIR's latest work.[12] The reviewers felt that the first two objectives were well developed. They noted a great deal of overlap between them, however, and suggested that the statements dealing with choosing and forging a career be integrated under one objective, entitled "Plan for and make career decisions." In reviewing the third objective, which would thus become the second objective, the advisors felt that the subobjective dealing with generalizable skills should emphasize the development of specific initial job-entry skills. It was suggested that approximately 20 employable skills be identified which could be demonstrated by performance exercises. The advisors approved two other subobjectives, dealing with demonstration of effective interpersonal relationships at work and effective work habits, respectively. They recommended that the fourth subobjective (originally SRA's specific skills objective) be eliminated per se, but that SRA's work—both the material covered in the subobjective and the related exercises developed for assessment—be examined for potential use in relation to the subobjective dealing with specific job-entry skills. Finally, the advisors suggested "Develop career and occupational capabilities"

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[12] Names of the advisors are listed in Appendix I.

as a more appropriate statement of the third objective.

These developments pointed to the need for further revision, and Dr. Ralph Bohn, professor of industrial studies at San Jose State College and a participant at the March conference, was asked to accomplish the task. To carry out the intent of the March recommendations concerning job-entry skills, Dr. Bohn developed two subobjectives. One dealt with the development of general knowledge and abilities. This included much of the earlier material that dealt with generalizable skills, but it was revised by Dr. Bohn to be more applicable to all age levels. He also developed a new subobjective in order to implement the recommendation to concentrate on a number of specific job-entry skills to be demonstrated by performance. This new subobjective outlined fifteen groups, or clusters, of occupations. Dr. Bohn noted that the trend in public vocational education is to provide instruction in terms of occupational "families"—rather than specific occupations—in order to "preserve flexibility, make more occupations available based on a single educational program, and provide more opportunity to put into practice skills and abilities developed in school." The occupational clusters included by Dr. Bohn focused on areas such as clerical/secretarial, sales/merchandising, data processing, and machine-tools.

In June of 1969, while Dr. Bohn was completing his revision of the objectives, the Palo Alto office of AIR began work on developing new exercises. It was highly unusual for exercise development to proceed on the basis of objectives that had not been through the complete review process and that still lacked descriptions of the specific behaviors to be assessed. But during the first half of 1969 the assessment of COD was still scheduled for 1971-72, the original target date. This schedule necessitated completion of new prototype exercises by August of 1969, and thus AIR Palo Alto was required to work with objectives that had not yet been finalized. Perhaps as a result, most of the exercises developed by AIR Palo Alto were judged unacceptable at an exercise review conference held in August of 1969.

At the time of this review, AIR Palo Alto maintained that detailed behavioral descriptions must appear in the statement of objectives if acceptable exercises were to be produced. The AIR Palo Alto staff also pointed out that previous objectives seemed to have been written primarily for the 17-year-old level. This approach, they noted, did not meet the criterion of directing the assessment toward four different age levels. To overcome these difficulties, AIR Palo Alto proposed to develop objectives and

behaviors separately for each age.

In light of these problems, the assessment of COD was postponed one year, to 1972-73, and AIR Palo Alto was asked to divert its energies from exercise development to work on the objectives.

Before beginning this new work, a representative of AIR Palo Alto met with National Assessment staff members to discuss the most feasible approach to the assessment of skills. It was pointed out that the occupational clusters, while representative of a wide variety of occupations, still necessitated the assessment of only those individuals who had received specialized training. And assessment of subpopulations with particular types of training ran contrary to National Assessment's intent of providing information on the outcomes of education *independent* of the nature of a person's specialized training. As a result of this discussion, the decision was made to assess only "generally useful" skills, that is, those of value in a wide variety of occupational settings. Among the considerations leading to the decision to omit job-specific skills from the assessment were the following: (1) generally useful skills will be of value in the labor market over a prolonged period even though the occupational structure (effects of technology) may be altered in the future; (2) the time required to assess job-specific skills would severely limit the number of exercises per occupation, thus resulting in inadequate coverage; (3) job-specific skills are not applicable to all four age levels; and (4) generally useful skills can be assessed over a period of years to show progress, whereas job-specific skills might be obsolete by the time of reassessment.

AIR Palo Alto began the revision of the objectives by comparing the different approaches of the previous sets and reviewing other related materials. This investigation led the AIR staff to make several revisions. The first objective, "Plan for and make career decisions," was reworked into two objectives, "Prepare for making career decisions," and "Develop and improve occupational capabilities." (The second objective dealt with active pursuit of a career, a concept that had been overlooked in previous sets of objectives.) The latest version of the objective dealing with demonstration of general occupational capabilities was also reworked into two major objectives: the material on generalizable skills became a single major objective; a subobjective dealing with effective work habits became a major objective; and the subobjective dealing with occupational clusters was omitted. Finally, AIR added an entirely new objective which dealt with attitudes about work.

In December, 1969, AIR's first draft of the objectives was reviewed by a number of subject matter specialists and educators. The objectives and behaviors focusing on the 13- and 17-year-old age levels were also discussed with students representing these ages.[13] The primary purpose of such discussions was to ensure that the objectives were realistic as well as desirable, and that the descriptions of behaviors were representative. The December reviews resulted in recommendations for shifting some behaviors from one age to another, deleting others, and adding new ones.

These suggestions were incorporated, and the objectives were then examined by subject matter specialists and lay citizens.[14] At this time the attitude objective ("Exhibit positive attitudes toward the world of work") received the most attention. Most of the reviewers objected to the emphasis on the person with a "steady job," with no recognition of professional volunteers and others productive in society. They also regarded the approach of the objective as limited to the stereotype of the "good life." The consensus was that an objective dealing with attitudes should indeed stress the notion that one's work should be a source of satisfaction and self-fulfillment, but that there are other attitudes about work that should also be included. Suggestions for rewording other objectives and behaviors were also expressed at this time.

AIR made the necessary revisions following the conference, and in April, 1970, the objectives were submitted to the chairmen of the lay and subject matter panels for a final review. The final version of the objectives for career and occupational development, which appears in the pages that follow, was accepted by National Assessment in July of 1970. The objectives have survived reviews by specialists and lay people and serve as the basis for exercises that will be administered at four age levels in 1972-73.

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[13] Names of the subject matter, teacher, and student reviewers are listed in Appendix J.

[14] Names of the subject matter experts and lay people are listed in Appendix K.

Chapter III

CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES

Career and occupational development (COD) is unique to National Assessment in that the objectives of the area are not the educational goals of any one school subject; COD objectives do not belong to a single discipline. Rather, the area includes many of the general achievements that result from general education and from guidance and counseling. These general achievements include accurate self-evaluation, thoughtful career planning, realistic attitudes toward work, employment-seeking skills, effective work habits, and the development of skills generally useful in a variety of occupations.

Specific vocational, or occupational, skills have been purposely omitted from the COD objectives, at least from those developed for the first assessment of this area. Assessment of these skills would yield the kind of information needed for an evaluation of vocational programs, but would require measuring the achievement within a particular vocation of *only* those who have had training in that vocation. National Assessment is not designed to assess subpopulations, such as those who have completed particular vocational training programs. Furthermore, vocational programs would not apply to 9- and 13-year-olds. For these reasons, and because of the complexities of measuring and reporting that would result from selective sampling, specific vocational skills have been omitted from the objectives. Therefore, National Assessment will seek to measure the extent to which youths and adults possess those generally useful skills which are acquired through general educational and work experience.

The statements related to Objectives I and II, which deal with preparation for making career decisions and improvement of career and occupational capabilities, respectively, avoid the bias of forcing career choices. Behaviors that facilitate long-term flexibility in careers and attendant decisions are described as desirable. Emphasis is on the advisability of setting practical, obtainable goals.

Some terms frequently used throughout the COD objectives could possibly be interpreted in several ways. Within the context of the COD objectives, "work" generally refers to remunerative activity for earning a living. This term can also be correctly interpreted as activity engaged in outside of the nine-to-five world of work, sometimes without remuneration, such as volunteer services and creative pursuits. The "world of work," however,

should be interpreted as the human society of employment, or systems of jobs. "Occupation" is used to refer to a person's principal specialty of work. "Career" refers to a series of jobs over a period of time.

A summary of the objectives and subobjectives prepared for career and occupational development follows. The detailed statement of COD objectives begins on page 16.

SUMMARY OF

CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES

I. Prepare for making career decisions

- A. Know own characteristics relevant to career decisions
- B. Know the characteristics and requirements of different careers and occupations
- C. Relate own personal characteristics to occupational requirements
- D. Plan for career development or change

II. Improve career and occupational capabilities

III. Possess skills that are generally useful in the world of work

- A. Have generally useful numerical skills
- B. Have generally useful communication skills
- C. Have generally useful manual-perceptual skills
- D. Have generally useful information-processing and decision-making skills
- E. Have generally useful interpersonal skills
- F. Have employment-seeking skills

IV. Practice effective work habits

- A. Assume responsibility for own behavior
- B. Plan work
- C. Use initiative and ingenuity to fulfill responsibilities
- D. Adapt to varied conditions
- E. Maintain good health and grooming

V. Have positive attitudes toward work

- A. Recognize the bases of various attitudes toward work
- B. Hold competence and excellence in high regard
- C. Seek personal fulfillment through own achievements
- D. Value work in terms of societal goals

COD Objectives

I. PREPARE FOR MAKING CAREER DECISIONS

This objective covers knowledge and activities necessary for making informed career decisions. One generally thinks of career planning primarily in terms of high school or college students; however, career planning is a life-long task of exploring and weighing reasonable alternatives. Even among 9-year-olds there are behaviors that will bear fruit later in intelligent career decisions. For 9-year-olds such behaviors include a beginning awareness of abilities and interests, of common occupations, and of the fact that some day they will need to accept adult roles. At the other extreme of adulthood, career planning means weighing current occupational status against capabilities and interests, and planning to improve within the context of present employment or through retraining and change of occupation.

A. *Know own characteristics relevant to career decisions.*

1. Be aware of own current abilities and limitations.

Age 9 Perceive own strengths in physical skills, leisure time activities, home and school responsibilities, interpersonal relations (for example, are aware that they can play baseball but cannot swim, do school homework on time but often forget to do home chores, get along better when playing with a single peer than with a group).

Age 13 (in addition to Age 9)
Are aware of own knowledge and abilities as compared with those of other individuals or groups (for example, perceive correctly that they have more ability in drawing than others in their classes, cannot spell as well as a sibling, know more about mechanics than most persons their age, can do better in social studies than in arithmetic); are aware that abilities and limitations may change with experience.

Ages 17, A (in addition to Age 13)
Perceive own specific abilities that may affect pending career decisions (for example, are aware that they have mechanical ability, moderate literary ability, are deficient in mathematical skills, work well at routine tasks, are persuasive, are not very creative).

2. Be aware of own current interests and values.

Age 9 Discriminate among own current likes and dislikes in leisure

time activities and home chores (for example, are aware that they like reading better than music, like riding bicycles more than solving puzzles, like caring for pets better than cleaning up rooms, enjoy group street games more than playing by themselves).

Age 13 (in addition to Age 9)
Discriminate among own current interests and values (for example, are aware that they are interested in helping or serving others, like or dislike certain school subjects, would rather work with abstract ideas than with concrete objects, would rather sew than cook, like outdoor jobs better than work indoors); are aware that interests and values may change as a result of future experience.

Age 17 (in addition to Age 13)
Are aware of own current interests and values that may affect career decisions (for example, know that they are oriented toward securing immediate employment, toward performing services for others, toward scientific or clerical work, toward making or doing things with their hands).

Adult (in addition to Age 17)
Are aware that own interests and values may not coincide with those of others.

3. Seek knowledge of themselves.

Ages 9, 13 (1) Discuss own interests and abilities with teachers, peers, guidance counselors, and parents (for example, talk about what activities they like and dislike and about problems and successes they have had in school subjects; ask others for feedback about how well they perform various activities).

(2) Participate in activities leading to more informed and accurate perceptions of own interests and abilities (for example, look at and read different books and magazines; have hobbies; do part-time jobs; play many kinds of games or sports; go to various community programs, events, and places of interest); know that strengths are gained through exercise of abilities (for example, know that practice is required to become a good pianist, dancer, ballplayer).

Age 17 (in addition to Age 13)
Discuss and evaluate own interests, abilities, goals, and values

not only with counselors in school but also in government and private employment agencies (for example, discuss results of scholastic and vocational guidance tests taken for specific purposes; compare own evaluation of abilities with opinions of others they respect; evaluate the accuracy, reliability, and relevance of information secured from different sources for making pending career decisions; use several sources of information to avoid judging from one exposure).

Adult Discuss and evaluate own abilities, interests, goals, and values with competent persons who can provide them with accurate and reliable information about themselves (for example, discuss own personal characteristics with their job supervisors, college advisors, vocational guidance counselors, clergymen, discerning friends).

B. *Know the characteristics and requirements of different careers and occupations.*

1. Know the major duties and required abilities of different careers and occupational families.

Age 9 Are aware of the main functions of highly visible careers and occupations (such as teacher, housewife, store clerk, waiter, doctor, nurse, service station attendant, policeman, fireman, farmer, mailman, barber).

Age 13 (in addition to Age 9)
(1) Know which occupations are in the same field (for example, know that pilots, truck drivers, and train conductors are in the field of transportation; know that chemists and biologists are in the field of science).

(2) Know the major duties and required abilities of common occupations and occupational families (for example, science–dentist, engineer, architect; social service–clergyman, social worker, school teacher; clerical–secretary, bookkeeper, bank teller; construction–carpenter, plumber, painter).

Ages 17, A (in addition to Age 13)
(1) Know the major duties and required abilities of a wide range of occupations and occupational families (for example, business/sales–salesman, personnel manager, accountant; social science–lawyer, librarian, psychologist; technical–lab technician, computer operator, photographer; service–cosmetologist, chef, fashion designer).

(2) Understand differences in responsibilities within occupational families (for example, laboratory technician, chemist, laboratory supervisor; custodian, custodian foreman, building and grounds supervisor; stock clerk, saleswoman, department head, purchasing agent, store manager; ambassador, consul, foreign service officers for labor, information, etc.).

2. Know differences in work conditions among and within occupational families.

Age 9 Know major ways in which occupations differ (for example, physical or mental, indoor or outdoor, work with people or work with things).

Ages 13, 17, A (in addition to Age 9)
(1) Know relative income levels for common occupations (for example, know that business executives earn more money than clerical employees; know that skilled workers earn more than unskilled workers; know that airline pilots earn more than stewardesses); understand the effects of public demand upon income in such occupations as writing and acting; understand that fringe benefits differ among occupations (for example, that civil servants and union members typically have prescribed benefits whereas the self-employed must plan own benefits).

(2) Recognize that occupations influence the kind of home life persons have (for example, are aware that truck drivers frequently are away from home; know that farmers sometimes must work long hours; know that shift jobs may require work at night).

(3) Know which people in different occupations work together (such as editors and authors; carpenters and contractors; nurses and physicians); know which people have minimum work contact with others (for example, artists, game wardens, housekeepers).

3. Know entry requirements for occupations.

Age 9 Know that some occupations require more education or training than others (for example, are aware that doctors and teachers go to school longer than barbers and file clerks).

Age 13 (1) Know relative levels of education required for common

jobs (for example, know that engineers go to school longer than technicians, doctors go longer than nurses; know that airline pilots receive more training than stewardesses, machinists more than drill press operators; know that no special education is necessary for manual laborers, farm hands, gas station attendants, and custodians).

(2) Are aware that there are relationships between school curricula and occupational families (for example, know which courses are college preparatory, which are commercial, which are technical; know that college careers can be pursued and college attended without taking the college preparatory program).

(3) Know that there are alternate routes to some occupations and that formal education may not be the sole means of entry (for example, know that experience is sometimes accepted in lieu of education; know that training and experience can be obtained in the military service as well as in formal schools).

Ages 17, A (in addition to Age 13)

(1) Understand the relevance of school curricula to occupational families (for example, know what courses to take to obtain jobs as draftsmen and mechanics; know that classes in English are relevant to careers as writers; know what classes will be useful for homemaking; know what courses to emphasize for contemplated careers as biologists).

(2) Know the educational requirements for a wide range of occupations (for example, know that doctors must intern following their academic training; know that an electrician or plumber must work several years as an apprentice; know that many jobs such as file clerk, taxi driver, or nurse's aid usually require only a short period of on-the-job training; recognize that many professional and technical fields will require continuing education after employment).

(3) Know the length of school required for various academic degrees (for example, are aware that an associate degree requires two years beyond high school, bachelor's normally requires four years, master's requires one to two years beyond bachelor's, Ph.D. and M.D. require three to four years beyond bachelor's).

(4) Know the specific nonacademic entry requirements for

various occupations (for example, know that union membership is required in order to hold many jobs; know that state and local licensing is required for many jobs; know that capital investment is necessary to set up an office as a doctor or dentist).

4. Be aware of the impact of social and technological changes on occupations.

Ages 9, 13 Are aware that some jobs (such as handcraftsmen, elevator operators) tend to become obsolete and new types of jobs (such as space technicians, astronauts, computer operators) are created because of social and technological changes.

Ages 17, A (1) Understand that technological, economic, and social changes result in decreases in the availability of some kinds of jobs and increases in others (for example, know that new discoveries and inventions in business and industry change the requirements for various kinds of skills; know that there are reduced opportunities in mining, factory work, and handcrafts and increased opportunities in service occupations, space, air transportation, and computer industries; know that major trends in the job market are toward specialized technical jobs requiring more training).

(2) Know that social conditions modify occupational entry requirements through such programs as New Careers, MEDEX, and the Manpower Training and Development Act.

(3) Are aware of the trend in educational and hiring practices that enables persons with broad educations in a family or group of occupations to qualify for a number of specific occupations (for example, that high school training in graphic communications permits initial employment as an apprentice or beginner in occupations such as drafting, illustrating, and cartography).

(4) Know that at many entrance points, educational institutions and businesses are modifying requirements for credentials, diplomas, and special qualifications; know that performance *after* selection is then the criterion for retention.

5. Know important factors that affect job success and satisfaction.

Age 9 Know that job performance often determines whether a

person can hold a job (for example, are aware that how well a worker does his job is important for his keeping the job and earning more money).

Age 13 (1) Know positive and negative factors that may result in advancement on jobs or in demotion or loss of jobs (such as effectiveness of work habits; quality of job performance; how the worker gets along with others; workers' attitudes; changes in job markets; favoritism; prejudice; organizational memberships; type and extent of required skills).

(2) Are aware of some reasons why people change jobs (such as to make more money; because they are fired; because they did not like their boss or the work; to broaden their experience; to meet new people; for self-fulfillment).

Age 17 (in addition to Age 13)
(1) Know possibilities for career advancement beyond entry jobs in different occupations (for example, know that production workers can advance to foremen, that sales clerks can become department heads, that opportunities for advancement for stewardesses are limited, that a starting engineer can become president, that persons trained for one occupation may go into other related occupations).

(2) Recognize that persons must update their skills in such ways as securing additional training, retraining, reading job-related periodicals, attending night school.

(3) Know the consequences of advancement in some occupations (for example, know that the nature of the work of supervisors is different from the work required at lower levels of the job ladder; know that the responsibilities of higher level jobs may produce greater pressures; know that persons can be promoted in some occupations only if they accept new positions in other locations).

(4) Are aware of the general satisfactions people obtain from various kinds of jobs (such as outdoor work for foresters; operating one's own business; taking care of others as in nursing; the gratification of teaching; associating with certain types of people).

Adult (in addition to Age 17)
Understand that advancement in occupational areas can

sometimes lead to job dissatisfaction or to less competent performance.

6. Seek information about occupations in general or about specific jobs. For example:

   Age 9 Ask teachers, counselors, and other adults about what they do at work and what different kinds of workers do on their jobs; visit factories, dairies, and businesses; see films that describe jobs.

   Age 13 (in addition to Age 9)
   Read about various vocations; observe and talk with workers.

   Age 17 (in addition to Age 13)
   Talk to counselors at schools, employment offices, and training centers; use reference sources, such as *Handbook of Job Facts, Occupational Outlook Handbook,* and brochures about jobs, to obtain information about occupations; seek information about a broad range of careers and occupations to maintain flexibility in their planning, not limiting themselves solely to the more commonly recognized occupations.

   Adult (in addition to Age 17)
   Seek information about careers and occupations congruous with their personal value systems, such as service to others and contributing to solutions of community, political, ecological problems.

C. *Relate own personal characteristics to occupational requirements.*

1. Associate own abilities and limitations with possible success in present or future occupational pursuits.

   Age 9 None

   Age 13 (1) Know own skills which might be used in part-time jobs (for example, mowing lawns, stocking merchandise, baby-sitting, delivering newspapers, carrying heavy objects, making change, preparing meals, sewing garments).

   (2) Recognize own deficiencies while realizing that many can be overcome and, thus, do not necessarily preclude entry into desired training or occupations.

Objective I C1, Age17

Age 17 (in addition to Age 13)
Associate developing abilities with potential career and occupational fields (for example, associate success in home economics courses with jobs in food service fields, success in mathematical courses with careers in the broad field of mathematics, good performance in English composition with potential success as journalists or other kinds of writers, skill in drawing with drafting or art, a hobby of rock collecting with a career in geology, experience in 4-H clubs with potential agricultural occupations; associate manual dexterity with success in a craft, awards for sewing work with apparel-making occupations, enjoyment of driving cars with transportation service jobs).

Adult Are aware of own capabilities and deficiencies in their current occupations (for example, know which aspects of their jobs they do best—to their own satisfaction and that of their supervisors—and which they do least well; know which of their deficiencies they can improve and which they cannot).

2. Relate personal interests and values to job characteristics and occupations.

Age 9 None

Age 13 Associate current interests and values with potential career fields (for example, associate concern for effects of pollution with possible career in ecology, interest in sewing and cooking with homemaking, interest in engines with the mechanical or engineering fields).

Age 17 (in addition to Age 13)
(1) Identify job characteristics which are important to them (such as earnings; prestige; intrinsic interest; training opportunities; promotional opportunities; hours; work environment; type of associates; opportunities to work with people, objects, data, and processes; to communicate ideas; to help or serve other people; to attain reknown; to create).

(2) Know types of occupations most likely to satisfy their personal interests and values, and associate realistic concepts of career fields with their developing life styles (for example, know which occupations allow one to serve others; know those occupations which permit one to work outdoors; know

which occupations have high income potential or are prestigious; know those occupations that require performance of routine tasks; understand family satisfactions and sacrifices associated with various occupations).

Adult (in addition to Age 17)
(1) Know other types of occupations and organizations besides present ones that would provide job satisfactions important to them or that would utilize their abilities to the fullest extent.

(2) Identify additional job characteristics important to them (such as security, fringe benefits, safety, health factors, amount of leisure time, extent of travel, company ethics).

D. *Plan for career development or change.*

1. Consider relevant factors in planning toward an occupation or career.

Age 9 Are aware that as they become adults there will be a need to make career plans and to understand the responsibilities of adult occupational roles.

Age 13 (in addition to Age 9)
(1) Relate the educational process to securing training basic to most occupations (for example, understand that the knowledge and skills they learn in and out of school will be beneficial to them and others in their future adult roles).

(2) Relate their planned curricula to own tentative career goals, modifying as new decisions are made (for example, plan to elect mathematics courses if they tentatively plan to be engineers, technical courses if they plan to enter vocational-technical training programs, agricultural courses if they plan to assume responsibility for family farms).

Age 17 (1) Discuss plans and career problems with competent advisors (such as school counselors, parents, employers, teachers, principals, clergymen, community agency personnel).

(2) Relate personal and external factors when making own career plans (for example, understand their military obligations; contemplate personal characteristics, training requirements, finances, and extra-personal factors such as parental

attitudes, family influence, societal needs, possible cultural obstacles, racism, and sexual discrimination; appraise own probabilities of success both subjectively and objectively in different kinds of education or training).

(3) Resolve conflicts in vocational choice (for example, consider practical alternatives; solve differences between own goals and desires of parents and between abilities and unreasonable aspirations).

(4) Understand the value of maintaining a number of occupational alternatives; recognize the problem of getting locked into narrow fields of specialization.

(5) Reappraise own current school or training programs to insure that appropriate occupational and/or academic requirements will be met, and modify plans to overcome any deficiencies.

(6) Plan sources and extent of financial aid (such as part-time employment, cooperative work-study programs, apprenticeship training programs, parental assistance, personal savings, possible athletic and academic scholarships, special assistance programs for the educationally deprived, and loans) and identify the requirements and restrictions associated with each; project plans for financial support over the time required for education or training.

(7) Investigate schools, training programs, and employment opportunities suited to own goals, capabilities, and financial resources; visit or correspond with schools and training institutions.

(8) Know of and can efficiently use sources of information (such as college catalogues, occupational references, government publications, industrial training program brochures) to find out about required courses, length of training time, cost of preparation, financial aid available, alternative methods of preparing for careers, and quality of training and placement assistance.

Adult (1) Anticipate requirements for upgrading within present occupations or for securing new employment, and plan to meet these demands (for example, plan to take courses or specialized training to improve present skills or to learn new

ones; plan to attend school part-time to work for advanced degrees; study for examinations for licenses and credentials).

(2) Discuss plans and career problems with competent advisors (such as employers, instructors, vocational counselors); talk to persons successful in areas of contemplated careers.

2. Be aware of alternative career choices or occupations and consider the consequences of career changes.

Age 9 None

Age 13 Are aware that the old pattern of a permanent, life-long career is no longer prevalent and that an occupational preference does not necessarily lock one in permanently.

Age 17 (in addition to Age 13)
Consider career alternatives by identifying occupations related vertically (for example, member of survey team–civil engineer; electrical draftsman–electrical engineer) and horizontally (such as auditor–accountant; computer programmer –systems analyst; waitress–receptionist).

Adult (1) Know alternative careers utilizing knowledges and skills that they possess (such as engineering–drafting; teaching–applied fields such as writing and business; research–teaching; journalism–public relations; dancing–dance instruction; window washer–custodian; secretary–typist).

(2) Consider relevant factors bearing on possible career changes (for example, financial status and aid; training required and available sources; employment opportunities; security; societal demands; effects on families; long-range goals; social values; desired satisfactions).

(3) Know possible advantages and disadvantages to consider in changing occupations or employers (such as an increase or decrease in earnings; promotion or demotion; better or worse work environment; more or fewer fringe benefits; better or worse climate; nearer to or further from ultimate career goals; possible effects on family).

(4) Are aware of conditions in specific situations that would warrant consideration of changing jobs (for example, being

exploited; impending layoffs; conflicts with supervisors; internal politics; health hazards).

II. IMPROVE CAREER AND OCCUPATIONAL CAPABILITIES

Along with planning for a career goes the actual doing of things that further those plans or that widen one's knowledge and skills. This objective is concerned with the implementation of career plans and with active participation in both in-school studies and out-of-school activities that enhance one's career and occupational capabilities.

Age 9 (1) Attempt to gain as much as possible from school. (Behaviors requisite to success in school are given under Objective IV—Practice Effective Work Habits.)

(2) Do home chores (for example, run errands; water flowers; care for animals; help with cleaning; take care of younger siblings; prepare parts of meals).

(3) Engage in hobbies (for example, collect stamps, rocks, and coins; read; draw; paint; play musical instruments).

(4) Visit places of interest in the community (such as planetariums, aquariums, dairies, newspaper plants, museums, zoos, factories, colleges).

(5) Participate in extracurricular and community activities (such as scouts, 4-H, school clubs, organized sports, contests, amateur shows).

(6) Use school and public libraries.

(7) Watch educational television programs.

Age 13 (in addition to Age 9)
(1) Attend educational events outside of school (such as science, agricultural, trade, and county fairs; musical programs; auto shows; plays; travel lectures; art exhibits; industrial displays).

(2) Engage in part-time work (such as delivering papers, baby-sitting, gardening, helping in stores, raising livestock).

(3) Participate in coursework outside of regular school

schedule (for example, attend summer school; take courses offered through youth programs).

Age 17 (1) Pursue education and training (such as college preparatory programs, vocational and on-the-job training, night school, correspondence courses).

(2) Obtain part-time and summer work and gain exposure to or experience in possible career fields (for example, sales clerk, library page, hospital aid, office clerk, gardener, laborer).

(3) Pursue hobbies (for example, cars, electronics, literature, building, gardening, sewing).

(4) Participate in extracurricular and community activities (such as car clubs, organized sports, 4-H, drama groups, foreign language clubs, political rallies, neighborhood youth clubs, school yearbooks and newspapers).

(5) Study on own initiative (for example, read magazines and books not required by school or work; make conscious effort to increase vocabularies; set up personal reading programs).

(6) Seek out people who can help them develop their interests (such as successful businessmen, academicians, research scientists, musicians, skilled journeymen, union leaders).

(7) Visit places of interest (such as museums, universities, aquariums, factories, planetariums, businesses, farms, proving grounds).

Adult (1) Obtain additional and advanced skills through training (for example, attend college and vocational and technical schools; take correspondence courses and adult education classes).

(2) Increase knowledge within career fields (for example, read journals, attend seminars, workshops, and conferences; discuss subject matter with co-workers).

(3) Take refresher courses and courses required to update knowledge and skills; participate in retraining and rehabilitation programs.

Objective II, Adult

(4) Participate in company-sponsored training programs (for example, management, technical, academic, skilled).

(5) Join professional and vocational organizations, including unions, to be eligible for training programs, advancement opportunities, placement services, periodic publications.

(6) Study toward, and take any necessary examinations for, professional registration and certification (for example, engineering fields, architecture, teaching and other educational services, cosmetology, boiler operation, and accounting).

(7) Attempt to renew and broaden interests and values (maintain relevancy of focus on their occupations).

III. POSSESS SKILLS THAT ARE GENERALLY USEFUL IN THE WORLD OF WORK

The six main categories of generally useful skills are numerical, communications, manual-perceptual, information-processing and decision-making, interpersonal, and employment-seeking. Some of these skill categories apply to other subject areas in the National Assessment besides career and occupational development. For example, communication skills are related to both the reading and writing areas; numerical skills are included in the mathematics area; information-processing and problem-solving skills include many social studies behaviors; and some work habits and interpersonal relations are also found in citizenship. To minimize overlaps, practical or on-the-job behaviors, rather than academic skills, have been selected to illustrate the COD subobjectives whenever possible. Second, measures common to other subject areas will not be used in the assessment of generally useful skills but will be referenced in reporting of results.

Although not strictly a generally useful skill, employment-seeking skill has been included under this objective. It is useful not only for initial job entry but also for improvement of occupational status and is a necessary complement to the other generally useful skills.

A. *Have generally useful numerical skills.*

1. Perform calculations and transactions involving money. For example:

Age 9 Make change; total up own purchases; do very simple mental computations without figuring on paper.

Age 13 (in addition to Age 9)
Figure simple budgets for allowances; total bills of sale.

Age 17 (in addition to Age 13)
Calculate sales tax; calculate interest and carrying charges; balance bank accounts; budget income; project budgeted credit card expenditures and payments; apply for loans.

Adult (in addition to Age 17)
Determine income tax; calculate annual maintenance costs for automobiles and houses; determine both direct and indirect costs of a piece of equipment; calculate depreciation of an item.

2. Understand numerical values in graphs, charts, and tables. For example:

Age 9 Read calendars; read bar, line, or circle graphs; read data from height-weight charts.

Age 13 (in addition to Age 9)
Look up sales tax in tables; read dimensions on drawings; determine distances on maps; locate streets by coordinates on city maps; look up drill and bolt sizes; read shoe and sock size conversion tables.

Ages 17, A (in addition to Age 13)
Interpolate values from tables; extrapolate values from graphs; read income tax tables; read stock market prices.

3. Use measurement equivalents, ratios, and proportions. For example:

Age 9 Convert linear, time, liquid, and weight measures, such as feet to inches, minutes to hours, gallons to quarts, ounces to pounds; determine the number of cents in a given denomination of coins.

Age 13 (in addition to Age 9)
Double recipes; adjust dress patterns for accurate fittings.

Ages 17, A (in addition to Age 13)
Convert room dimensions into square units of floor area; express time and distance measures in miles per hour; scale down the ingredients in mixtures; calculate miles per gallon of gasoline; figure amounts of liquids for fertilizer solutions given ratio of the liquids.

Objective III A4

4. Estimate numerical quantities. For example:

Age 9 Estimate lengths of rooms, heights of persons, product and quotient of two small whole numbers; estimate sizes of pieces of paper needed to wrap packages; estimate number of pieces of colored paper needed to cover bulletin boards; estimate time required to complete simple tasks.

Age 13 (in addition to Age 9)
Estimate areas of geometric figures such as rectangles; estimate width of streets, size of windows; estimate distances in sports as for races and setting up baseball diamonds.

Age 17 (in addition to Age 13)
Estimate areas of geometric figures such as triangles; estimate floor areas in houses, costs of weekend trips; estimate interest on principal and sum of interest and principal.

Adult (in addition to Age 17)
Estimate distances between cities; estimate time required to do jobs and to get places.

5. Compare numerical values. For example:

Age 9 Arrange lists of numbers in increasing order of size; state whether one of two given magnitudes is smaller, equal to, or larger than the other; compare weight and size of two objects.

Age 13 (in addition to Age 9)
Compare common fractions with decimal fractions, areas of two geometric figures, prices of magazine subscriptions with monthly costs.

Ages 17, A (in addition to Age 13)
Compare interest rates of money lenders, earnings from payments per hour versus piecework, savings on commuter books versus regular fares, costs per unit, such as the better buy of two prices for canned goods; compare differential earnings from feeding livestock different lengths of time; compare purchase price with used selling price or pawned value; compare cost of new versus cost of used item.

6. Calculate amounts needed to do practical jobs. For example:

Age 9 Calculate number of cans of pet food to buy for a certain

number of days, how much candy to buy for groups of children, number of pieces of paper needed by classrooms of pupils to do projects.

Age 13 (in addition to Age 9)
Calculate number of cans of paint required to paint given areas, pounds of meat to serve a certain number of persons.

Ages 17, A (in addition to Age 13)
Calculate how long to cook roasts, amount of feed needed for a given number of farm animals, square yards of carpeting needed to cover floors, number of sheets of plasterboard required to enclose rooms, bushels of seed grain needed to sow a given number of acres, cost of gasoline for auto trips given required information, number of sheets of plywood needed to cover floor, board-feet of lumber required to build objects.

7. Make graphic representations of numerical quantities. For example:

Age 9 Draw lines of specified lengths with rulers; color halves and quarters of circles; make simple bar and line graphs.

Age 13 (in addition to Age 9)
Construct line, bar, or circle graphs to depict given data; draw geometric figures with given areas; make scale drawings of rooms of specified sizes; draw angles of given sizes with protractors.

Ages 17, A (in addition to Age 13)
Represent relative sizes of two given quantities by scaled drawings; plot points on coordinate systems.

8. Interpret statistical data. For example:

Age 9 Know order of letter grades and meaning of arithmetical averages; comprehend relative sizes, as of populations.

Age 13 (in addition to Age 9)
Understand batting averages; understand concept of range; figure out trends from information such as population growth, accidents; distinguish between associations and causality.

Age 17 (in addition to Age 13)
Recognize misleading assumptions, conclusions, and state-

ments in the use of statistics or presentation of data; understand the concepts of central tendency and variance; interpret trends from information such as demand for products or change in number employed; understand accident statistics and industrial failure rates.

Adult (in addition to Age 17)
Interpret stock market figures.

B. *Have generally useful communication skills.*

1. Communicate understandably (speak, write, demonstrate, and use nonverbal means).

a. Explain, describe, demonstrate, and give directions. For example:

Age 9 Direct persons to nearby landmarks, using chalkboards or paper to aid in giving directions; instruct others in the rules of children's games; use checkerboards to show how to play checkers; show and tell how to lay out hopscotch grids, make paper hats, address envelopes, and solve puzzles; use felt boards to illustrate class talks.

Age 13 (in addition to Age 9)
Tell and demonstrate how to assemble model airplanes and cars, look up material in libraries, adjust machinery, make cakes, and use simple patterns to make dresses; tell how devices work; describe the fundamentals of baseball; use graphs, tables, maps, and pictures in written or oral reports.

Age 17 (in addition to Age 13)
Use actual equipment to explain processes and principles; tell how to do tasks and jobs, transfer on streetcars and bus routes, and replace parts; explain cause and effect relationships and concepts such as that of supply and demand; use charts to describe organizations; use diagrams to explain assembly of parts.

Adult (in addition to Age 17)
Tell how to complete forms such as pay vouchers or insurance claims; assign duties to different persons to get jobs done; give on-the-job training; explain reasons for company policies and for malfunctions of equipment.

b. Give speeches. For example:

Age 9 Present book reports; tell about trips taken and events attended.

Age 13 (in addition to Age 9)
Report on group projects; talk on current events and social problems such as water pollution and conservation; give campaign speeches for school offices.

Age 17 (in addition to Age 13)
Introduce guest speakers; talk to scouts and 4-H groups; speak pro or con at protest rallies; speak in formal discussions and debates.

Adult (in addition to Age 17)
Introduce new products; conduct sales meetings; speak at professional and union meetings; make presentations to school boards, city councils, and industrial groups.

c. Write legibly and speak clearly. For example:

All Ages Print and write in script; spell age-appropriate words correctly; pronounce words clearly; use language understandable to peers and associates.

d. Write reports and summaries. For example:

Age 9 Write book reports; summarize movies; write down school assignments.

Age 13 (in addition to Age 9)
Take notes from reference books; prepare reports using reference materials; summarize magazine and newspaper articles.

Age 17 (in addition to Age 13)
Write minutes of meetings; describe accidents; summarize important points of speeches; take notes from lectures; outline material; write news articles, compositions, and summary reports of opinion surveys.

Adult (in addition to Age 17)
Prepare technical, progress, and trip reports; write business memoranda, personnel reports, and logs of job activities.

e. Write letters, want ads, and telegrams. For example:

Objective III B1e, Age 9

Age 9 Write letters to sick classmates and thank-you notes to relatives.

Age 13 (in addition to Age 9)
Write letters and postcards requesting pamphlets and technical information; write want ads to sell bicycles and to obtain part-time jobs.

Age 17 (in addition to Age 13)
Write telegrams and job application letters.

Adult (in addition to Age 17)
Write business correspondence and letters to editors and political representatives.

f. Fill out forms. For example:

Age 9 Complete personal data cards for school and clubs; fill out simple order blanks as on cereal boxes and in magazines.

Age 13 (in addition to Age 9)
Fill out school class enrollment forms, applications for part-time jobs, money orders, and order blanks for multiple items as in mail order catalogues.

Age 17 (in addition to Age 13)
Complete application forms for jobs, drivers' licenses, loans, credit cards, college admission, and social security numbers; make out accident reports.

Adult (in addition to Age 17)
Complete insurance, inventory, income tax, and government agricultural forms; fill out welfare and loan application forms.

2. Understand communications.

a. Understand written instructions, directions, and information. For example:

Age 9 Follow printed directions on tests and for assembly of parts; use references such as dictionaries, telephone books, and TV program schedules; follow game instructions.

Age 13 (in addition to Age 9)
Understand instructions giving steps for preparing reports

and doing projects; scan for the general notion by reading passages quickly to get the gist; read and understand periodicals such as *Boys' Life, Mademoiselle, Model Airplanes,* and *Farm Digest;* use references such as encyclopedias, library card catalogues, and files.

Age 17 (in addition to Age 13)
Follow directions for laying out dress patterns and installing pieces of equipment; understand instructions for completing and submitting forms; read and understand periodicals such as sewing, knitting, and homemaking magazines, *Consumer Reports,* and *Popular Mechanics;* use references such as college catalogues, transportation schedules, and zip code handbooks.

Adult (in addition to Age 17)
Follow instructions about filming documents and reporting for jury service; understand legal documents, technical reports, and official notices; understand periodicals such as professional and trade journals.

b. Understand spoken instructions, directions, and information. For example:

Age 9 Understand instructions to run errands and directions to go from one place to another; understand school announcements such as what to do in emergencies; understand information given by speakers and in films.

Age 13 (in addition to Age 9)
Understand instructions to play new games and to do assignments; understand instructions of employers about how to do tasks and jobs.

Ages 17, A (in addition to Age 13)
Understand information given by counselors about registering for courses, preparing for careers, and planning school activities.

c. Understand pictorial, graphic, and symbolic information. For example:

Age 9 Distinguish between right and left hands; know meanings of common warning signs; understand ideas presented in progress charts, geographical maps, and line graphs.

Objective III B2c, Age 13

Age 13 (in addition to Age 9)
Understand meanings of street and highway signs; know common abbreviations; interpret line, bar, and circle graphs.

Ages 17, A (in addition to Age 13)
Understand codes and symbols as used in diagrams of electrical circuits, on weather maps, on dress patterns, on house and building plans, and in technical manuals.

3. Interact verbally with others. For example:

Ages 9, 13 Converse with other persons face-to-face and on telephones; participate in group discussions; relay oral messages verbally and in writing; ask and answer questions; introduce persons.

Ages 17, A (in addition to Ages 9, 13)
Participate in panel discussions; make appointments; take notes in interviews.

C. *Have generally useful manual-perceptual skills.*

1. Use common tools and equipment. For example:

Age 9 Use tools such as hammers, screwdrivers, pliers, scissors, manual can openers, rotary egg beaters, bottle openers, rulers, and measuring spoons and cups; use equipment such as roller skates, bicycles, brooms and dustpans, vises, needles and thread, toasters, dial telephones, vending machines, and self-service elevators; operate slide and movie projectors.

Age 13 (in addition to Age 9)
Use tools such as hand saws, chisels, squares, levels, wrenches, tape measures, knives, compasses, and protractors; use equipment such as electric mixers, irons, drills, sewing machines, knife sharpeners, air pumps, paper cutters, lawn mowers, and vacuum cleaners.

Ages 17, A (in addition to Age 13)
Use tools such as socket and compressed-air wrenches, miter boxes, micrometers, calipers, electric knives, and soldering irons; use equipment such as electric saws, lathes and sanders, floor polishers and sanders, automobiles, farm shop machinery, typewriters, duplicating machines, and desk calculators.

2. Make and assemble, using appropriate materials. For example:

Age 9 Make posters, selecting paper strength and weight; build wooden bird houses, puzzles, and yard toys, recognizing differences between very soft and hard woods; make doll dresses; make watercolor and finger paintings and papier-mâché objects; carve paraffin and soap figures; stir and bake premixed cakes; fold and glue bookcovers; assemble tinker toys and erector sets, recognizing that metals are stronger than woods; mount rock, coin, and stamp collections; assemble tabbed cutout and standup scenes and jigsaw puzzles.

Age 13 (in addition to Age 9)
Make skate boards, doghouses, book shelves, and other such objects, using wood and plastics for those requiring beauty and ease in forming; prepare meals; assemble model airplanes, cars, and mobiles; arrange flowers; collate and staple papers; assemble crystal sets and electrical projects, recognizing that copper is used instead of steel for conducting electricity; sew aprons and pot holders; knit and crochet.

Ages 17, A Make dresses and furniture from patterns; make indoor and outdoor objects such as trays and ornaments, recognizing that copper and aluminum do not corrode; build objects from wood and metals and apply finishes to protect the materials from insects and the elements; make household furnishings from plastics which resist staining; assemble "knock-down" furniture, swing sets, steel shelving, and radio component kits; install household appliances and traverse rods; build slot cars; set out plants and trees.

3. Adjust, repair, and maintain. For example:

Age 9 Set thermostats and alarm clocks; adjust weights on scales; replace batteries in flashlights; sew on buttons; mend tears in clothing and pages of books; lubricate bicycles and roller skates; polish shoes; take care of pets and plants; clear tables and wash dishes; make beds.

Age 13 (in addition to Age 9)
Adjust binoculars and microscopes; wash and wax cars; set timers on clock radios and stoves; set controls on washing machines and dryers; change bicycle tires; thread bobbins; replace fuses in electrical circuits; clean stoves and refrigerators; wash windows; set mouse traps; empty or change dust bags in vacuum cleaners; mow lawns.

Objective III C3, Ages 17 and Adult

Ages 17, A (in addition to Age 13)
Adjust focus and hold controls on television sets; change automobile tires; clean and check spark plugs; sharpen knives; adjust tension on door closers and pulley belts; make fine adjustments on camera apertures, carburetors, and lawn mowers; replace faucet washers and furnace filters; paint rooms; prune bushes and trees; repair broken furniture and fences.

4. Read displays and scales. For example:

Age 9 Read rulers, room thermometers, clocks, bathroom scales, measuring cup scales, tire pressure gauges, and heat settings on irons; interpret weather vanes.

Age 13 (in addition to Age 9)
Read speedometers, fuel gauges, graduated cylinders, barometers, rain and wind gauges, clinical thermometers, cost and gallons on gasoline pumps, and sports score boards.

Ages 17, A (in addition to Age 13)
Read instruments on automobile dashboards, multimeters fo. volts, ohms, and amperes, pressure gauges, and radio and TV tube testers; measure inner and outer dimensions of pieces of pipe.

5. Make visual representations. For example:

Age 9 Draw simple maps showing directions to familiar landmarks; draw pictures showing general shapes of objects such as vases and blocks of wood.

Age 13 (in addition to Age 9)
Sketch three-dimensional pictures of rooms, objects, and buildings; draw simple floor plans of furnishings in rooms.

Age 17 (in addition to Age 13)
Draw landscapes with proper perspectives, organizational charts, floor plans of houses, and diagrams showing how belts fit on wheels to operate machinery and how film is threaded through movie projectors; sketch relative positions of vehicles in accidents.

Adult (in addition to Age 17)
Draw schematic layouts of electrical wiring and plumbing.

D. *Have generally useful information-processing and decision-making skills.*

1. Learn efficiently and remember specifics, procedures, and principles which are basic to further learning or which are frequently needed in their work. For example:

   Age 9 Learn new concepts, principles, and skills associated with school curricula; learn and remember new procedures and generally useful skills associated with home and extracurricular activities such as rules for playing games and how to dial telephones; memorize important specifics such as phone numbers, names, addresses, and dates.

   Age 13 (in addition to Age 9)
   Learn and remember new procedures and generally useful skills associated with home and extracurricular activities such as shortcut mathematics computations and how to devise mnemonic schemes, operate farm and home equipment, use card catalogues, and make notes from reference books.

   Ages 17, A (in addition to Age 13)
   Learn and remember important concepts, principles, and skills useful in future training and employment such as typing, car maintenance, operation of office machines, steps to take in doing work in laboratories, kinds of stitches appropriate for various sewing tasks, office procedures, and how to drive cars in all kinds of traffic and weather conditions.

2. Apply concepts, principles, and procedures in circumstances different from those in which learned. For example:

   Age 9 Use arithmetic to add up costs of own purchases at stores; use reading skills learned in school to read books of own choice during leisure time; when outdoors, look for specimens studied in nature classes and for phenomena studied in science classes; use principles of friction to prevent falling on ice or slippery stairs; use knowledge of growth to plant and raise gardens.

   Age 13 (in addition to Age 9)
   Use acquired language skills in writing papers or in speaking in other courses; bring up ideas discussed in one class in the context of another; use knowledge of electricity to repair light cords; use the science of heat and food utilization to

control weight; use knowledge of magnification to read fine print and see details on photographs.

Age 17 (in addition to Age 13)
Use principles of design to furnish and arrange rooms and to improve appearance of homes; use knowledge of mechanisms to maintain and repair small engines; use knowledge of automobile operation to perform routine car maintenance; use knowledge of foods to plan and prepare meals; use principles of physics when cooking food at different altitudes and in pressure cookers; use shorthand to take notes and typing to prepare reports; use knowledge of electricity to repair lamps and small appliances; use chemistry to remove spots from clothes; use knowledge of chemistry and biology to feed trees and gardens; use new vocabulary words in conversations; use the scientific method in social situations in order not to prejudge until facts are known.

Adult (in addition to Age 17)
Think of job markets in terms of the concept of supply and demand.

3. Analyze information and define problems. For example:

Age 9 Distinguish errors in what they observe, read, and hear; note contradictions in different descriptions of the same event; identify errors in arithmetical computations; recognize grossly illogical statements.

Age 13 (in addition to Age 9)
Recognize evasiveness and double talk; observe poor bicycle functioning and determine cause of trouble; recognize that educational and vocational decisions must be made; judge their own performances in school work, home chores, part-time jobs, sports and games, and peer group rapport in terms of how well they would like to be doing.

Age 17 (in addition to Age 13)
Recognize unstated assumptions, emotional appeal, and illogical arguments; distinguish relationships between the requirements of common occupations and the contents of school subjects; troubleshoot malfunctions in equipment such as typewriters and automobiles; diagnose communication difficulties between two people; recognize cause-effect relationships; deduce themes in literary works.

Adult (in addition to Age 17)
Compare present job situation to desired goals and identify discrepancies; perceive reasons for interpersonal conflicts.

4. Collect and organize data. For example:

Age 9 Know sources of various kinds of information; list topics to include in letters; can organize information into sensible outlines; schedule a day's play, study, and home chores; schedule activities for small groups of children; arrange items on shelves; organize objects by size, material, and use.

Age 13 (in addition to Age 9)
Organize filing systems with numbers, letters, and topical headings; recognize when there is insufficient information to solve problems; schedule programs for clubs and classes; arrange tools and materials in work bench areas; survey the opinions of a number of friends before making decisions; evaluate sources of information.

Age 17 (in addition to Age 13)
Arrange own study plans; outline compositions, using two or three degrees of subordination; identify and evaluate sources of information in terms of accuracy and reliability; price articles in a number of stores before purchasing; collect information relevant to personal characteristics and world of work; schedule and coordinate tasks of several people on projects; anticipate when supplies will be needed, account for time needed for delivery, and order accordingly; combine information from two or more sources, as for term papers based on a number of reference books.

Adult (in addition to Age 17)
Organize own financial records to complete income tax forms; organize office filing systems; make necessary legal and financial arrangements for starting small businesses; schedule and coordinate activities of several groups of employees; schedule crop plantings.

5. Develop and evaluate alternatives. For example:

Age 9 Determine alternative routes to walk between school and home and know advantages and disadvantages of each; think of several possible ways to spend an evening and evaluate them in terms of the amount of fun each would offer;

evaluate TV programs offering two different types of entertainment; evaluate various possible gifts in terms of the interests and tastes of the intended recipients.

Age 13 (in addition to Age 9)
Evaluate watercolors, chalk, crayons, and other art media against the criterion of ease of changing mistakes; consider possible outcomes of alternative actions such as joining or not joining peer groups, doing or neglecting assigned school work, obeying or disobeying crossing guards; evaluate which of two part-time jobs to accept; evaluate which of two social activities to attend.

Age 17 (in addition to Age 13)
Estimate the objective and subjective probabilities of succeeding academically at several different kinds of schools; develop several plans for financial support during education or training; determine value priorities of conflicting goals such as several different places for education; weigh several job offers in light of personal criteria of desirability.

Adult (in addition to Age 17)
Compare present and predicted future economic conditions for investing money, changing jobs, and going into own businesses.

6. Make decisions or choose alternatives in terms of relevant criteria. For example:

Age 9 Pick books to read that are relevant to topics being studied in school; choose team members on relevant bases; decide on one of several activities to do during leisure time.

Age 13 (in addition to Age 9)
Judge oral class reports of other students by applying given standards; select the most pertinent reference facts to include in reports; decide the sequence in which to perform tasks; choose activity clubs to join; decide which of several motion pictures to attend.

Age 17 (in addition to Age 13)
Decide either to repair or replace components of cars, depending on cost or time; decide either to buy or make dresses, depending on which is less expensive; select several schools to apply to for admission after determining those that offer factors relevant to personal goals such as scholastic

standards, financial aid, and opportunity for independent study; choose from among several job offers the job best suited to personal characteristics, present needs, and future goals.

Adult (in addition to Age 17)
Decide which appliances or pieces of furniture to purchase; decide how to apportion income for budgeting; decide which employees deserve promotions or salary increases; decide whether to hire, transfer, and fire persons; select evening courses with relevance to current personal goals of improving occupational capabilities, broadening cultural knowledge, and taking refresher courses.

7. Devise plans, new ideas, and better ways of doing things. For example:

Age 9 Think of new games to play; think of arguments to persuade someone; make up stories, poems, and tunes; plan parties; think of gifts to buy or make; find shortcuts.

Age 13 (in addition to Age 9)
Plan group games and projects; devise schemes for coding messages; design stools and bookends; set club purposes and goals.

Age 17 (in addition to Age 13)
Outline plans for carrying out complex tasks such as tutoring other students and conducting opinion surveys and elections; suggest more convenient arrangements of supplies in stockrooms and locations of office equipment; design furniture and garments; alter dresses to make them fashionable; plan to obtain financial support necessary to implement career development plans; coordinate schedules for work and extracurricular activities; plan best methods of earning varsity letters.

Adult (in addition to Age 17)
Develop plans for opening own businesses; suggest improvements in company policies in light of social trends; suggest improvements in factory and office procedures; project needs for personnel, material, and money, and develop budgets; think of new marketable products and services; suggest employee group actions for improving work conditions, pay, productivity, and recreation; modify tools and equipment to adjust to new task demands and to facilitate job performance.

Objective III D8

8. Implement and modify plans on the basis of feedback. For example:

Age 9 Follow through on activity plans unless unexpected circumstances arise to alter them; work faster to complete projects if time grows short; substitute indoor games for outdoor play if it rains; select different books if first choices are being used by others.

Age 13 (in addition to Age 9)
Spend additional time on homework and less on play if homework problems require more time than anticipated; choose other days to go to movies if help is needed at home; devise new topical headings for filing systems if original ones do not classify material as logically as expected.

Age 17 (in addition to Age 13)
Reassign tasks of committee members if individual talents are different than originally thought; rearrange contents of kitchen cupboards to permit more efficient movements in the kitchen; modify major curricula in schools if their interests change; seek employment if unable to obtain admission to school when first desired; modify techniques in sports by learning from mistakes.

Adult (in addition to Age 17)
Recalculate department budgets to adjust for under-expenditures from one fund and unanticipated costs of other types; seek other jobs if layoffs are anticipated, if employers' policies are contrary to personal value systems, and for other personal reasons; plan for retraining if skills become obsolete and if current occupational choices do not satisfy needs as expected; seek rehabilitation training if injuries and age preclude further employment in current occupations.

E. *Have generally useful interpersonal skills.*

1. Interact constructively with supervisors. For example:

Age 9 Are receptive to and benefit from suggestions and constructive criticism; comply with reasonable decisions made by teachers, parents, and other persons with legitimate authority; seek assistance when needed; interact effectively to reach common goals, insisting that reason rather than authority be the basis of decisions; defend own rights in face of unreasonable or illegitimate demands.

Ages 13, 17 (in addition to Age 9)
Attempt to understand responsibilities of persons in authority; express minority or new viewpoints constructively and work to change undesirable practices.

Adult (in addition to Ages 13, 17)
Defend employers against unjust accusations and rumors; refrain from making unnecessary criticisms of supervisors in the presence of others; join with others as in labor unions to seek common goals.

2. Provide effective leadership. For example:

Age 9 Offer suggestions about how to do things; explain what the rules are; help others improve their performances; explain consequences of different choices as bases for group decisions.

Age 13 (in addition to Age 9)
Influence others to obtain their cooperation without dominating them; mediate differences; intercede for those unjustly criticized; volunteer to lead group projects; set good examples for others; praise work well done; take the initiative in welcoming new persons to groups, putting them at ease, and helping them feel wanted.

Age 17 (in addition to Age 13)
Elicit better efforts from others by good example, encouragement, and enthusiasm; schedule, coordinate, and evaluate objectively the work performance and work products of others; assume responsibility for errors of groups of which they are leaders.

Adult (in addition to Age 17)
Criticize tactfully and impersonally the work of others for whom they are responsible; offer concrete constructive suggestions; utilize persons' strengths in assigning work; counsel workers to guide their development on their jobs and in their careers; inform higher management of the talents of subordinates; are receptive to suggestions from those they supervise; consult with those they supervise before making decisions; recognize when to assert direct or indirect authority.

3. Work effectively with peers, co-workers, and others. For example:

Objective III E3, Age 9

Age 9 Treat others respectfully; share and take turns; present own beliefs and experiences while determining group activities; help others in need of assistance in such ways as assuring that other children are included in activities, explaining school work, and helping search for lost articles; refrain from making fun of others; tell the truth; return articles borrowed from others; keep promises.

Age 13 (in addition to Age 9)
Attempt to understand viewpoints of others; are sensitive to nonverbal cues such as expressions, gestures, tone; cooperate on group projects and in team sports; talk over differences and compromise when necessary to reach agreements and solutions.

Age 17 (in addition to Age 13)
Consider time schedules and work demands of others and coordinate own activities accordingly; consult others when making plans that affect them; weigh consequences to others of own acts such as practical jokes, gossip, false accusations, and malicious insinuations; provide information needed by others; are honest in matters involving information or money; help others in need of assistance in such ways as assuming part of their work loads, demonstrating new techniques and equipment, and suggesting ways that others can solve problems.

Adult (in addition to Age 17)
Maintain ethical standards of conduct in their professions and businesses; remember and call others by name; anticipate needs and expectations of outside contacts, such as customers, and adapt behavior accordingly.

F. *Have employment-seeking skills.*

Age 9 (1) Know commonly used terms relating to work (such as employer, employee, and want ad).

(2) Know general factors associated with jobs (such as pay, hours, and vacation).

Age 13 (in addition to Age 9)
(1) Know kinds of jobs available to persons of their own age and sex (for example, delivery, domestic, babysitting, gardening).

(2) Know ranges of wages currently being paid for part-time jobs they can do.

(3) Know where to look for part-time and summer jobs (for example, school counselors, local businesses, use of position-wanted ads).

(4) Can read and understand help-wanted ads in local newspapers (such as abbreviated words and requirements).

(5) Know information to inquire about regarding jobs (such as pay, hours, and duties).

Ages 17, A (in addition to Age 13)

(1) Know factors relevant to jobs they are personally interested in (such as availability, entry requirements, geographic locations, pay scales, sick leave, insurance, vacations, and job demands).

(2) Know where to seek information regarding job openings and know advantages and disadvantages of each (such as employment agencies, state employment offices, college placement offices, personnel departments, and government agencies).

(3) Can write position-wanted ads.

(4) Can write letters of application and background resumes.

(5) Prepare for job interviews by taking with them necessary information such as social security numbers and addresses and phone numbers of references.

(6) Explain to prospective employers what they are seeking in terms of conditions and rewards for themselves in jobs (such as hours, pay, and experience).

(7) Fill out job application forms completely, accurately, and neatly.

(8) Dress and groom appropriately for job interviews (for example, clothes, make-up, and accessories).

(9) Conduct themselves with poise in interviews (including such things as manners, posture, tact, and enthusiasm).

(10) Know additional conditions of jobs to inquire about (such as fringe benefits, opportunities for advancement and training, and union membership).

IV. PRACTICE EFFECTIVE WORK HABITS

Effective work habits are essential to satisfactory job performance, no matter what one's career or occupation. Until a worker has developed good work habits in applying his generally useful and occupationally specific skills, his career and occupational development is not complete.

By the age of nine, children should be exhibiting behaviors in their school work, home chores, and play activities that are the roots of effective work habits. These habits should be more obvious in 13-year-olds, who have had increased opportunities to learn and practice them. The behaviors should have become habitual in the actions of 17-year-olds in school and at work.

A. *Assume responsibility for own behavior.*

Ages 9, 13 (1) Know they are responsible for their own behavior.

(2) Attend school regularly and are usually punctual for scheduled meetings and appointments (for example, classes, transportation, lunch, school, office, out-of-class meetings, and home schedules).

(3) Pay attention to assignments and explanations; complete and submit homework and project assignments when due; check own work for thoroughness and accuracy.

(4) Do fair share in any group task (for example, do own part of team work, and help clean up classrooms).

(5) Observe rules and regulations, questioning those they believe are unfair.

(6) Keep parents and teachers informed of their whereabouts (for example, field trips, meetings, games).

(7) Avoid damaging others' property and exercise care for own and others' safety.

Ages 17, A (1) Know they are responsible for their own behavior; understand and accept consequences of actions.

(2) Are present regularly at school and at work; are punctual for appointments; notify persons concerned when necessarily absent or detained.

(3) Perform work to the best of their ability without wasting time and effort; follow through on commitments.

(4) Check accuracy, completeness, and quality of own work and are aware of the consequences of errors (for example, know that poor quality work may cause loss of customers or clients and will waste time and materials; acknowledge mistakes; rectify errors; admit failure to understand).

(5) Know own limitations and do not disregard them (for example, skills, knowledge, physical stamina).

(6) Observe rules and regulations and carry out established policies and procedures, questioning and attempting to change those they believe are unfair.

(7) Avoid damaging property of others and exercise care for own and others' safety.

B. *Plan work.* For example:

Age 9 Know when school assignments are due; write down assignments rather than depend on memory; know home and outside group responsibilities, as for youth groups; allow adequate time to complete assignments before deadlines; have necessary supplies, books, and equipment ready when needed; concentrate on completing one activity at a time; avoid losing time through procrastination and diversion by less important activities; volunteer ideas during group planning.

Age 13 (in addition to Age 9)
Know when assigned or volunteer work on extracurricular projects must be completed, as for contests, plays, and special programs; know when and where to perform part-time job duties; identify explicit duties, goals, and deadlines; set reasonable priorities on tasks, first doing those that require urgent attention or that require the most effort; schedule activities around key events that are fixed or critical; consider their own unique abilities and limitations in their planning.

Objective IV B, Ages 17 and Adult

Ages 17, A Set priorities on use of time; know deadlines for assignments and projects; write notes of work assigned and of specifications for end products; are aware of own responsibilities at school, work, and home; use intermediate goals as checkpoints on progress toward long-range objectives; monitor progress toward goals to detect the need for revisions in the goals themselves or in the approach being followed to reach the goals; schedule and organize tasks to allow optimum time to complete each one before deadlines; allow time in schedules for unanticipated urgencies and unscheduled time demands; anticipate when workloads or schedules require modified plans or methods; schedule more challenging or creative work to match daily peaks in own energy cycles and more routine or passive work when energies are low; read reports before meetings.

C. *Use initiative and ingenuity to fulfill responsibilities.*

1. Use initiative but seek assistance when needed. For example:

Age 9 Do their work without being prodded; ask teachers to explain material not understood; ask family members to listen to and prompt memorized material; ask librarians for help in locating reference materials.

Age 13 (in addition to Age 9)
Do more than required or expected, such as reading beyond assigned pages, asking to make up work that they have missed, and volunteering to learn special skills.

Ages 17, A (in addition to Age 13)
Are alert to tasks that must be done and that they can do, and then proceed to do them on own initiative; think of ways that they can contribute to organizations of which they are members; inform employers of any unused abilities; ask teachers and employers to explain details of required work if necessary.

2. Are resourceful in accomplishing work. For example:

Age 9 Think of ways to get home chores done more quickly, as by combining several errands.

Age 13 (in addition to Age 9)
Think of ways to perform part-time work more quickly and

more effectively, as by eliminating unnecessary steps in tasks; think of ways to save time in doing school work or outside group tasks, as by standardizing methods of doing frequent, similar tasks; use reminder systems such as lists of things to do.

Age 17 (in addition to Age 13)
Vary pace to maintain efficiency and effectiveness; are alert to new and better ways of doing things and recommend improvements to supervisors; eliminate unnecessary tasks; improvise methods and tools whenever possible; spend minimum time in reading by screening out irrelevant material, skimming for main ideas, reading selectively, and practicing rapid reading techniques; economize writing time by preparatory outlining, writing in simple, direct styles, and using standard formats for routine material.

Adult (in addition to Age 17)
Economize on paperwork by eliminating work which is no longer useful, combining forms and records, and avoiding recordkeeping for unlikely circumstances; protect their planned office schedules against interruption by training others to make appointments; avoid losing time through unnecessary involvement in details, fruitless discussions, and working on problems to the point of diminishing returns; use new processes and machines available to help do their work better and faster.

D. *Adapt to varied conditions.*

Age 9 (1) Adjust to temporary changes in classroom or school schedules (for example, rainy days and assemblies).

(2) Continue to work despite distractions such as noise and visitors.

(3) Tolerate nonideal work surroundings.

Age 13 (in addition to Age 9)
(1) Apply self to best of ability in spite of setbacks.

(2) Maintain self-control in emergencies (such as fires, accidents, and storms).

Ages 17, A (1) Discriminate between those nonideal situations which

cannot be changed and those which need not be accepted; adapt to the former and protest and attempt to change the latter.

(2) Adjust to varying assignments and to changes in methods and work situations.

(3) Concentrate and maintain output in spite of disruptions, malfunctions, noise, and competition.

(4) Tolerate nonideal work surroundings and situations.

(5) Work under occasional pressures of time, overload, and stress.

(6) Persevere in spite of setbacks (such as defeat, failure, and opposition).

(7) Remain calm and use good judgment in crises, emergencies, and unexpected events.

E. *Maintain good health and grooming.*

Age 9 (1) Attend regularly to personal hygiene (for example, bathe, wash hands before meals).

(2) Go to school health offices, dispensaries, or doctors when sick or injured.

(3) Stay at home when ill or when they have communicable diseases.

Age 13 (in addition to Age 9)
(1) Refrain from use of harmful drugs.

(2) Take precautionary measures to prevent illness (for example, exercise regularly; avoid unnecessary exposure; eat balanced meals).

(3) Take necessary steps to regain health during and after illness (for example, take prescribed medicine; rest; avoid overexertion).

Ages 17, A (in addition to Age 13)
(1) Dress and groom appropriately for work or school.

(2) Take good care of clothes (for example, properly launder and iron or dry clean; repair; store properly).

(3) Have regular medical and dental checkups.

(4) Seek professional help when needed (for example, doctor, dentist, and psychiatrist).

V. HAVE POSITIVE ATTITUDES TOWARD WORK

Today more than ever there is a great diversity of life styles. An occupation or career is only one way of achieving personal self-fulfillment in life. Nevertheless, it is possible within the context of career and occupational development to identify desirable attitudinal goals that should result from the educational process. Thus, National Assessment seeks to assess attitudes toward work not only in terms of societal goals but also as acceptance and understanding of the diversity of life styles, regard for competence and excellence in endeavors of many different kinds, and pride in one's own achievements.

A. *Recognize the bases of various attitudes toward work.*

Age 9 Know that some people have jobs and others do not.

Age 13 Know that appropriate work can be a source of personal satisfaction.

Ages 17, A (1) Recognize that people have different attitudes toward work (for example, know that some people work only for the money, that some people find their work absorbing and rewarding, that some people avoid looking for jobs, and that some people place work second in importance to other more personally meaningful activities).

(2) Understand why people have the attitudes that they do toward work (for example, understand that attitudes toward work are affected by many factors, such as education, age, sex, family income, race, religion, nationality, work experience, and self-concept; know that some people have experienced inequalities in obtaining work and on jobs; know that the "work ethic" is a predominant attitude in America's history; know that differences in social, ethnic, racial, and educational background make it easy for some people to obtain good jobs and difficult for others to obtain any job; recognize that frustrated ambitions may affect attitudes).

(3) Are aware of the human need to experience personal satisfaction in own accomplishments (for example, recognize that people's aspirations differ, that workers gain different types of satisfaction from their jobs, and that some people are content with jobs that offer no opportunity for expression of ideas, creativity, or decision-making, but only the satisfaction of accomplishing routine tasks; know that some people find personal fulfillment in activities outside work).

(4) Understand the reasons for their own attitudes toward work (for example, recognize the effects of personal experience in seeking or doing work; recognize the influence of attitudes and experiences of peer groups and family members; understand the part that self-concept and sense of self-esteem play in their attitudes toward the world of work).

(5) Understand the personal and societal consequences of their own attitudes (for example, know that negative attitudes interfere with and positive attitudes contribute to effective job performance; know that many employers consider attitude as important as skill; weigh the consequences of disregard for the world of work versus active planning and preparation for roles in it).

B. *Hold competence and excellence in high regard.*

Age 9 (1) Respect and admire others who try to achieve to the best of their ability.

(2) Recognize and appreciate the efforts and accomplishments of others that merit acknowledgment (such as scholarship, athletic prowess, and creativity).

(3) Acclaim others deserving of praise or recognition.

Age 13 (in addition to Age 9)
(1) Appreciate the accomplishments and contributions of others regardless of their backgrounds (for example, ethnic group, sex, education, and nationality).

(2) Recognize excellence attained through activities other than work (for example, housewife, artist, and volunteer worker).

Ages 17, A (in addition to Age 13)

(1) Encourage others to develop and to use their skills and abilities to achieve maximum competence.

(2) Accept the diversity of life styles of others, understanding that excellence is not necessarily confined to work activities.

C. *Seek personal fulfillment through own achievements.*

Age 9 (1) Try to do their best in school and home work.

(2) Enjoy the process of learning and the development of their skills.

(3) Recognize the value of own accomplishments.

Age 13 (in addition to Age 9)
(1) Set personal goals and know when achievements do and do not measure up to reasonable standards of excellence for themselves, and seek to improve own performances.

(2) Decide priorities and achieve satisfaction from doing well those things which are personally important.

(3) Want to achieve some economic independence through part-time and summer jobs.

Age 17 (in addition to Age 13)
(1) Are willing to vouch for own work and work products.

(2) Feel responsible for making wise career choices.

(3) Strive to achieve economic self-sufficiency through continuing education or employment.

Adult (in addition to Age 17)
(1) Know that the quality of their work may have an effect on the status of their vocations and professions.

(2) Understand the effects of their work-related activities on their families, their families' self-concepts, and themselves.

(3) Experience intrinsic satisfaction from own accomplishments and do not require frequent feedback from supervisors to achieve a sense of reward.

Objective V C, Adult

(4) Value and enjoy learning as a continuous process throughout life.

D. *Valu work in terms of societal goals.*

Age 9 (1) Understand the desirability of working.

(2) Are willing to share family responsibility.

Age 13 (in addition to Age 9)
(1) Understand the value of work and other constructive activities as social responsibilities.

(2) Respect honest work engaged in for a living and do not differentially value persons on the basis of earnings, education, or occupation.

(3) Recognize the contributions and abuses of various vocations to the well-being of individuals, groups, and society.

Age 17 (in addition to Age 13)
(1) Believe that each person should strive to be self-supporting to the extent that he is able.

(2) Appreciate the economic interdependence of their families and other persons in the community, of businesses with other businesses, and of their communities with other communities near and far.

(3) Encourage and help others to secure employment.

(4) Understand the purposes of laws concerning child labor, strikes, workman's compensation, working conditions, minimum wages, and hours of work.

Adult (in addition to Age 17)
(1) Want to be self-supporting and to provide for their own needs and the needs of their families.

(2) Understand the integral parts they play in meeting societal needs because of what they produce, the services they render, and the activities in which they engage.

(3) Support worthwhile programs designed to assist the disadvantaged to secure employment and to learn marketable skills.

(4) Work to extend civil rights in the world of work to all persons regardless of race, religion, sex, or ethnic or socioeconomic origin.

(5) Believe that members of both labor unions and business groups should strive to be ethical in the stand they take on labor-management issues.

(6) Appreciate the advantages and disadvantages to labor unions, employers, and the public of existing labor legislation, such as the machinery for settling labor disputes, regulation of union practices, and antitrust laws.

(7) Maintain high personal ethical standards to contribute to the standards of their companies and vocations or professions.

Appendix A

CONTRACTOR STAFF MEMBERS INVOLVED IN THE PREPARATION OF CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES*

AIR Pittsburgh (July, 1965 - August, 1967)

James W. Altman, Director

Boyd Kowal, Research Assistant

Edward J. Morrison, Director, Vocational Education Program

Michael Rosenfeld, Assistant Director, Vocational Education Program

Earl Seiler, Research Assistant

SRA (July, 1965 - August, 1967)

Stephanie Alnot, Editor

Bruce A. Campbell, Project Director

William V. Clemans, Director, Test and Guidance Division

Sue Ellen Johnson, Editor

Jean M. Palormo, Manager, Industrial Test Department

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*Affiliations listed in this and all succeeding appendices are for the period of participation in the development of COD objectives.

AIR Pittsburgh (November, 1968 - February, 1969)

F. Coit Butler, Director, Vocational Education Program

Sam Cho, Research Scientist

Arthur Shapera, Research Assistant

Karen F. Trocki, Senior Research Assistant

AIR Palo Alto (June, 1969 - July, 1970)

John V. Baer, Senior Research Associate

Richard A. Bond, Senior Research Associate

Vincent N. Campbell, Associate Director, Social and Educational Research Program

Janet L. Fazio, Research Scientist

Manford J. Ferris, Research Scientist

Daryl G. Nichols, Director, Social and Educational Research Program

William L. Raley, Research Scientist

Appendix B

AIR (PITTSBURGH) VOCATIONAL EDUCATION OBJECTIVES PANELISTS

(August, 1965)

John M. Buckey, Director of Placement, New York University

William W. Cooley, Professor, School of Education, University of Pittsburgh

Maurice J. Daly, Assistant Superintendent, Vocational-Technical Education, Quincy Public Schools, Quincy, Massachusetts

Frederick B. Davis, Graduate School of Education, University of Pennsylvania

Iris Fike, Principal, Arsenal Vocational School, Pittsburgh

John H. Gorsuch, Personnel Director, U. S. Steel Corporation, Pittsburgh

M. Ray Karnes, Chairman, Department of Vocational and Technical Education, College of Education, University of Illinois

William J. Micheels, President, Stout State College, Menomonie, Wisconsin

Otto Pragan, Assistant Director of Education, American Federation of Labor and Congress of Industrial Organizations, Washington, D. C.

Grant Venn, Superintendent, Wood County Board of Education, Parkersburg, West Virginia

Appendix C

SRA VOCATIONAL EDUCATION OBJECTIVES PANELISTS

(August, 1965)

Lawrence Borosage, Director, Vocational Rehabilitation Placement Project, Michigan State University

Rupert N. Evans, Dean, College of Education, University of Illinois

John A. Jarvis, Dean of Instruction, School of Industrial Education, Stout State College, Menomonie, Wisconsin

Jacob Stern, Chairman, Industrial Education Department, University of Illinois

Appendix D

REVIEWERS OF SRA PRELIMINARY STATEMENT OF GOALS

(September, 1965)

Lawrence Borosage, Director, Vocational Rehabilitation Placement Project, Michigan State University

Lowell Burkett, Executive Secretary-Elect, American Vocational Association, Washington, D. C.

Kenneth E. Dawson, Executive Secretary, American Industrial Arts Association, Washington, D. C.

Rupert N. Evans, Dean, College of Education, University of Illinois

John Foskelt, President, American Screen Products Company, Chatsworth, Illinois

David Gottlieb, Director, Program Development and Evaluation, Job Corps, Washington, D. C.

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Robert Hoppock, Professor of Education, New York University

John A. Jarvis, Dean of Instruction, School of Industrial Education, Stout State College, Menomonie, Wisconsin

Roland F. Miller, Director of Training, U. S. Steel Corporation, Pittsburgh

Mayor D. Mobley, Executive Secretary, American Vocational Association, Washington, D. C.

Otto Pragan, Educational Advisor, American Federation of Labor and Congress of Industrial Organizations, Washington, D. C.

Carroll L. Shartle, Chairman, Personnel Research Board, Ohio State University

Jacob Stern, Chairman, Industrial Education Department, University of Illinois

Donald Super, Professor of Education, Teachers College, Columbia University

John P. Walsh, Deputy Director, Department of Labor, Office of Manpower, Automation, and Training, Washington, D. C.

Ralph C. Wenrich, Chairman, Department of Vocational Education, University of Michigan

Appendix E

SRA VOCATIONAL EDUCATION CONFERENCE PARTICIPANTS

(October, 1965)

Raymond L. Collins, Superintendent of Schools, Manhasset Public Schools, Manhasset, New York

Norman K. Hamilton, Assistant Superintendent, Portland Public Schools, Portland, Oregon

H. Leroy Selmeier, Assistant Superintendent of Instruction, Grosse Pointe Public Schools, Grosse Pointe, Michigan

H. Titus Singletary, Jr., Associate State Superintendent of Instruction, Georgia Department of Education

Appendix F

CHAIRMEN OF LAY PANELS

J. T. Anderson, President, Idaho School Trustees Association, Twin Falls, Idaho

Mrs. Leland Bagwell, President, Georgia Parent Teachers' Association, Canton, Georgia

Mrs. Gerald Chapman, Former School Board Member and State Legislator, Arlington Heights, Illinois

Jerry Fine, President of Board of Education, Inglewood, California

A. Hugh Forster, Lancaster, Pennsylvania

Mrs. Romine Foster, President, New York State Parent Teachers' Association, Pittsford, New York

Mrs. Verne Littlefield, Past President, Arizona State Parent Teachers' Association, Phoenix, Arizona

Herbert Rogin, School Board Member, East Brunswick, New Jersey

Milton S. Saslaw, Miami, Florida

Benton Thomas, Kansas City, Missouri

Richard E. White, Rochester School Board, Rochester, Minnesota

Appendix G

ECAPE VOCATIONAL EDUCATION CONFERENCE PARTICIPANTS

(August, 1967)

Kenneth Ashcraft, University Park Psychological Center, Denver

Marjorie Brown, Evaluation Specialist, University of Minnesota

John Butler, Dunwoody Industrial Institute, Minneapolis

John Currie, Detroit City Schools, Detroit

Betty Ellis, Supervisor, Los Angeles City School District, Los Angeles

Fred Felder, Twin Cities Opportunities Industrialization Center, Minneapolis

Anna C. Fults, Department of Home Economics, Southern Illinois University

Mildred Hillstead, Colorado State College

Goldie Kaback, City College of New York

Walter Kranz, St. Paul City Schools, St. Paul

Kenneth Lauderdale, Supervisor, State Vocational Guidance, Mississippi State Education Department

Alfred Lease, Administrative Vice President, St. Cloud State College, St. Cloud, Minnesota

Orville Nelson, American Industrial Project, Stout State University, Menomonie, Wisconsin

Joseph Norton, School of Education, State University of New York at Albany

James Shill, Mississippi State University

Harry Smallenburg, Los Angeles City Schools, Los Angeles

Marlowe Sperstad, Wisconsin State University

William Sylvester, Engineering Technologies Division, State University of New York at Alfred

Neil E. Vivian, Ohio State University

Walter Weitgrefe, State University of New York at Alfred

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Appendix H

ECAPE VOCATIONAL EDUCATION CONFERENCE PARTICIPANTS

(March, 1968)

Ralph C. Bohn, President, American Industrial Arts Association, Washington, D. C.

Betty Ellis, Supervisor, Los Angeles City School District, Los Angeles

Floyd Johnson, President, American Vocational Association, Washington, D. C.

Rubert Lusk, Automobile Manufacturers Association, Detroit

Edward J. Morrison, Research Coordinator, Center for Vocational and Technical Education, Ohio State University

Edward Roeber, Indiana State University

Elizabeth J. Simpson, University of Illinois

Robert Swanson, Dean, Graduate College, Stout State University, Menomonie, Wisconsin

Robert Taylor, Director, Center for Vocational and Technical Education, Ohio State University

Appendix I

AIR (PITTSBURGH) CAREER AND OCCUPATIONAL DEVELOPMENT CONFERENCE PARTICIPANTS

(March, 1969)

Ralph C. Bohn, Professor of Industrial Studies, San Jose State College

Harold M. Byram, Research and Development Program in Vocational-Technical Education, Michigan State University

Betty Ellis, Supervisor, Los Angeles City School District, Los Angeles

Edward J. Morrison, Research Coordinator, Center for Vocational and Technical Education, Ohio State University

Robert Swanson, Dean, Graduate College, Stout State University, Menomonie, Wisconsin

Garry Walz, Professor of Education, University of Michigan

Appendix J

REVIEWERS OF AIR (PALO ALTO) CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES

(December, 1969)

John Apgar, Teacher, Hamilton Junior High School, Parkersburg, West Virginia

James Bishop, Student, Overfelt High School, San Jose, California

Ralph C. Bohn, Professor of Industrial Studies, San Jose State College

Bertha Bojorquez, Student, Overfelt High School, San Jose, California

Connie Chapman, Teacher, Parkersburg High School, Parkersburg, West Virginia

Isadore Fang, Student, Overfelt High School, San Jose, California

Roy Fields, Teacher, Robertson Junior High School, Fremont, California

Margaret Flynn, Teacher, Quincy High School, Quincy, Massachusetts

Roy Gutierrez, Student, Overfelt High School, San Jose, California

Virginia Haller, Emerson School, Parkersburg, West Virginia

John D. Krumboltz, Professor of Education and Psychology, Stanford University

Jack C. Merwin, Dean, College of Education, University of Minnesota

Marcia Mitchell, Teacher, Adams School, Quincy, Massachusetts

Edward J. Morrison, Research Coordinator, Center for Vocational and Technical Education, Ohio State University

Janie Naravjo, Student, Overfelt High School, San Jose, California

Nancy Nichols, Student, Woodside High School, Woodside, California

Robert Swanson, Dean, Graduate College, Stout State University, Menomonie, Wisconsin

Ralph W. Tyler, Science Research Associates, Chicago

Yolanda Vasquez, Student, Overfelt High School, San Jose, California

Garry Walz, Professor of Education, University of Michigan

Ralph C. Wenrich, Professor of Vocational Education, University of Michigan

Bert W. Westbrook, Professor of Psychology, North Carolina State University

Appendix K

SUBJECT MATTER AND LAY REVIEWERS OF AIR (PALO ALTO) CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES

(February, 1970)

Ralph C. Bohn, Professor of Industrial Studies, San Jose State College

Jean Dye, President, Ohio School Boards Association

John D. Krumboltz, Professor of Education and Psychology, Stanford University

Edward J. Morrison, Research Coordinator, Center for Vocational and Technical Education, Ohio State University

Helen Radke, Member, Washington State Board of Education

Robert Swanson, Dean, Graduate College, Stout State University, Menomonie, Wisconsin

Benton Thomas, President, Schooley, Incorporated, Kansas City, Missouri

Marvin Wall, Director of Research, Regional Council, Voter Registration Project, Atlanta

Garry Walz, Professor of Education, University of Michigan

Ralph C. Wenrich, Professor of Vocational Education, University of Michigan

Bert W. Westbrook, Professor of Psychology, North Carolina State University

Minoru Yasui, Executive Director, Commission on Community Relations, Denver

NATIONAL ASSESSMENT POLICY COMMITTEE

James A. Hazlett, Chairman and National Assessment Administrative Director

George B. Brain, Chairman, National Assessment Advisory Committee

John Burkhart, College Life Insurance, Indianapolis, Indiana

Leroy F. Greene, Assemblyman, California, Education Commission of the States

William C. Kahl, State Superintendent of Public Instruction, Wisconsin

John W. Letson, Chairman, Operations Advisory Committee

Theodore D. McNeal, State Senator, Missouri

John W. Tukey, Chairman, Analysis Advisory Committee

Ralph W. Tyler, ECAPE Chairman, 1964-68

Mrs. Julia Rivera de Vincenti, Secretary of Labor, Puerto Rico

Stephen J. Wright, Consultant to the President, College Entrance Examination Board